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ABSTRACT

In this document, detailed objectives for each grade level are listed according to the following categories: for grades K-9, numeration, basic operations, fractions, money and time, and measurement and geometry; for grades 10-12, numeration, basic operations, fractions, and practical applications. Each objective is keyed to an expected level of achievement: awareness, knowledge, application, mastery, reinforcement, and enrichment. An overview of the basic mathematics program at Northern Lehigh School District is also presented. (MP)

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# BASIC MATHEMATICS PROGRAM, K-12

## Learning Objectives

## Scope and Sequence

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SE 025 256

# BASIC MATHEMATICS PROGRAM K-12

## Learning Objectives

## Scope and Sequence

During the spring of 1977, the task of revising and coordinating the mathematics program for the Northern Lehigh School District was undertaken by a mathematics curriculum committee. This project is but one step in the school district's plan for complete curriculum re-organization and updating. From May 1977 through July 1978 various workshops, meetings, validations, revisions, and additions were accomplished.

This mathematics program provides realistic goals for all students K-12, along with the flexibility to meet the special needs of individual youngsters. The program is based on competencies that should be developed by each student, and is presented in three documents: Basic Mathematics, K-12; Specialized Mathematics, secondary level; Competency Testing Manual.

Northern Lehigh School District
Slatington, PA 18080

## Northern Lehigh School District

### Board of School Directors

| | |
|---|---|
| President | Mr. Woodrow Searfass |
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| | |
|---|---|
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| Assistant Principal: Slatington High School | Mr. Lynn J. Solt |
| Principal: Slatington Junior High School | Dr. James A. Shafer, Jr. |
| Principal: Slatington Elementary School | Mr. Gerald Zinner |

## MATHEMATICS CURRICULUM COMMITTEE

DIRECTOR:
Mr. Gerald Zinner
Principal - Slatington Elementary School

MEMBERS:
Miss Martha Best
Head Teacher - Walnutport Elementary School

Miss Leslie Campbell
Teacher - Slatington Elementary School

Mr. Robert Mack
Teacher - Slatington High School

Mr. Dalton Semmel
Teacher - Slatington Junior High School

Miss Carol Smith
Head Teacher - Slatedale Elementary School

Mrs. Doris Smith
Department Coordinator, 7-12
Slatington High School

CONSULTANTS:
Mr. William J. Albright
Program Specialist
Carbon-Lehigh Intermediate Unit

Dr. William W. Oswalt
Assistant Director
Carbon-Lehigh Intermediate Unit

## NORTHERN LEHIGH SCHOOL DISTRICT

## DISTRICT PHILOSOPHY

The Northern Lehigh School District believes that knowledge, mental and motor skills, creative self-expression, problem-solving capabilities, a desire for learning, and self-respect are necessities for the development of social awareness, moral sensibility, and civic responsibility.

The Northern Lehigh School District believes that many agencies (the family unit, church, and other community organizations) must interact to promote positive affective development.

The Northern Lehigh School District shall provide instruction in general knowledge, in mental and motor skills, and in problem-solving techniques. The needs and interests of students will be considered within the limits of available resources. We believe that the development of positive self-concept can be influenced through instruction in general knowledge, training in muscular coordination and mental processes, and provision of a variety of other influential experiences emphasizing character, morals, and civic responsibility.

## DISTRICT WIDE GOALS

PREAMBLE:

"Man's reach must exceed his grasp." Goals must be set high enough to make them difficult, if not impossible, to reach. We must place our emphasis on the continual attempt to move toward the target. Such is the nature of working with goals.

Any set of worthwhile educational goals can only be implemented through the cooperation and sustained commitment of all segments of a community. These are the proposed goals of the schools of Northern Lehigh. Assistance, cooperation, and/or support from any and all of the people of the Northern Lehigh School District is essential for attainment of these goals.

The Northern Lehigh School District commits itself to the following goals:

I. To insure that students reach an expected and measured level of proficiency in factual knowledge, cognitive learning, and mental and motor skills.

The students shall:

A. Receive a broad general background of knowledge and develop skills.

B. Reach their physical and intellectual capabilities.

C. Apply knowledge and skills to solve problems relevant to the individual, the school, and community.

D. Achieve a working knowledge of our language and the ability to communicate in both oral and written expression.

E. Acquire a working knowledge of mathematical concepts and the ability to compute and solve problems.

F. Learn to reason and use this logical thinking to distinguish fact from opinion.

G. Gain a working knowledge and understanding of basic scientific principles.

H. Gain a working knowledge of the social sciences.

I. Acquire knowledge and understanding of their physical make-up and learn proper care.

J. Learn about life careers and opportunities and receive appropriate vocational training.

K. Acquire knowledge and skills to cultivate an interest in a wide variety of activities for wise use of leisure time.

II. To promote in students the affective learning needed to develop social awareness, moral sensibility, and civic responsibility.

The students shall:

A. Learn to accept responsibility and to respect the rights of others.

B. Develop a positive attitude toward self, school, and community.

C. Learn through interaction with teachers and community.

D. Prepare for responsible adulthood and parenthood.

E. Develop the curiosity and interest in learning needed to adjust to a changing world.

III. To develop in students an attitude of appreciation and active concern for the world around them, their own cultural heritage, and the cultural heritage of others.

The students shall:

A. Acquire knowledge of and appreciation for their environment.

B. Achieve a working knowledge and understanding of their heritage and government.

C. Gain a knowledge and understanding of cultures other than their own.

D. Accept a commitment to making a better world.

IV. To foster in students a positive self-image, both physically and mentally.

The district shall:

A. Meet the individual needs and interests of the students whenever possible and instruct them on their own level of ability.

B. Encourage students to test the limits of their physical and mental abilities.

C. Use positive reinforcement.

D. Set realistic goals and develop self-image through success.

E. Encourage humanization of teacher-student relationship.

F. Promote emotional stability through proper use of student's abilities and disabilities.

G. Encourage self-expression and creativity.

H. Cultivate affective skills for self-understanding.

I. Promote the theory that the school exists for the child.

V. To promote and foster the cultural and social growth of the community through the sharing of intellectual wealth and human and physical resources.

The district shall:

A. Encourage involvement in and appreciation of aesthetic areas.

B. Encourage community participation in planning and revising educational programs and facilities.

C. Encourage community interests and participation in the learning process and community-wide use of facilities.

## INTRODUCTION

The adoption of a district philosophy and goals in 1976 led to a commitment to examine and reorganize our curriculum to best realize these goals. The codification of curriculum will provide teachers with the tools to best educate our students.

The Mathematics Committee was formed with representation from elementary (3), junior high (1), and senior high (2) and placed under the direction of the Slatington Elementary School principal. Working in consultation with two intermediate unit advisors, the committee worked over a period of two years on the project.

The committee set as its first goal the identification of competencies which would be expected of all graduates. To achieve these competencies a basic mathematics program was designed, which indicates learning objectives with expected levels of achievement for each grade. In addition, specialized courses were developed, using the same format, to provide a complete mathematics program for students of all abilities.

A testing program to monitor basic mathematics skills development was designed. Tests will be administered at grades three, six, nine, and eleven or twelve. The tests in grades three, six, and nine will check on students' progress in skill development and provide teachers with a diagnosis of areas in need of further attention. The test which is administered in grade eleven or twelve will assess the students' mastery of the competencies which are expected of all graduates. The competencies include skills and information used in practical applications which relate to the students' functioning in real life situations.

In the course outlines learning objectives are keyed to expected levels of achievement. The achievement levels are:

| Abbreviation | | |
|---|---|---|
| Aw | AWARENESS: | Students becomes conscious of concept by exposure and having attention drawn to it. |
| K | KNOWLEDGE: | Student can recall/define/identify concept after direct teaching/learning experiences. |
| Ap | APPLICATION: | Student uses concept to accomplish tasks appropriate to functional level. |
| M | MASTERY: | Student independently applies concept to accomplish tasks with increasing efficiency. |
| R | REINFORCEMENT: | Student maintains and broadens mastery through application of concept to accomplish tasks for greater sophistication. |
| (E) | ENRICHMENT: | Suitable objective for students of superior ability. |

Objectives within each grade level are organized in strands--

In grades K-6 the strands are:

Numeration, Addition, Subtraction, Multiplication, Division, Fractions, Money, Time, Measurement, Geometry

In grades 7-9 the strands are:

Numeration, Basic Operations (addition, subtraction, multiplication, division), Fractions, Money, Time, Measurement, Geometry

Within each strand, K-9, skills are listed sequentially.

The program in the upper grades is organized into specialized courses: Algebra I, Algebra II, Geometry, Trigonometry, Analytic Geometry, Advanced Mathematics, Business Mathematics, and Personal Business Mathematics.

Despite the listing of objectives by grade, the individual ability of each pupil will determine levels of performance; thus, a given student may be functioning on grade level in some areas but may need more basic training in others. Likewise, individuals may be advanced beyond stated expectations. An enrichment strand is provided for students with special abilities. The teacher should determine where each child is in terms of a given objective and teach from that point.

The Basic Mathematics Program is designed to lead to competencies for each student. The basic operations applied to a practical situation will be the measure to determine how proficient each student becomes in using mathematics for life. Provisions should be made for all students to receive instruction in the practical application area.

## MATHEMATICS PHILOSOPHY

Proficiency in fundamental arithmetical skills, understanding of mathematical concepts, and their practical applications represent life skills which students need to function in our society. The need to develop these competencies requires a structured program which presents the skills, concepts, and applications in an appropriate scope and logical sequence.

Maintaining a sequence is absolutely essential in the development of arithmetical skills. Instruction should follow the sequence, insuring proficiency at each level, in order to assure successful learning. Conceptual development is enhanced when teaching strategies proceed from the concrete, to the pictorial, to the symbolic. All areas of mathematics are more easily grasped when there are practical daily applications in problem solving.

Mathematics, like all systems which use symbols, is a language for communicating information and ideas. Through numbers, terms, operations, and concepts, mathematics attempts to convey a message in concise form. Because of these characteristics, it is essential that basic mathematics be mastered by everyone. In addition to and beyond the basic mathematics program special needs related to higher ability levels, career preparation, and foundations for higher education will be met through specialized courses.

MATHEMATICS K-12
GENERAL COMPETENCIES FOR THE GRADUATE

Each student will demonstrate a grasp of fundamental mathematical skills. The student will be able to use these skills in practical applications.

Fundamental Mathematical Skills and Information

The student will:

- -Demonstrate an understanding of our system of numeration.
- -Use and apply the techniques of addition, subtraction, multiplication, and division of rational numbers.
- -Understand and use basic mathematical terminology.
- -Perform simple computations and estimations mentally.
- -Have a basic knowledge of measurement systems and the ability to measure.
- -Discriminate basic geometric shapes.
- -Demonstrate the ability to use money.
- -Demonstrate an understanding of our time system, its notations, and the ability to tell time.
- -Demonstrate the ability to collect, compile, and interpret numerical data.

PRACTICAL APPLICATION

The student will:

- -Apply his knowledge of our monetary system in effective personal and/or business economic management.
- -Apply his knowledge of our time system in his personal and occupational life.
- -Apply his knowledge of both metric and English measurement systems and use measurement devices accurately.
- -Read tables and graphs.

BASIC MATHEMATICS PROGRAM

OVERVIEW

| GRADE | NUMERATION | BASIC OPERATIONS (Addition, Subtraction, Multiplication, Division) |
|---|---|---|
| K | Works with sets (groups), number values 0-10, similarities and differences. | Deals with concept of "add to" and "take away" using objects. |
| 1 | Uses numbers to 99; recognizes ordinals; counts by 2's, 5's, 10's; deals with symbols and place value. | Combines sets and objects; uses computational patterns and symbols for addition and subtraction; add up to sum of 19; subtracts with differences less than 20. |
| 2 | Uses numbers to 500, reads numbers to 999; recognizes terms for place value; applies expanded notation. | Adds and subtracts with regrouping tens to ones including up to two digit numbers; recognizes use of associative and commutative properties and use of zero; recognizes symbols for multiplication; uses multiplication tables 1-5; recognizes identity property of one. |
| 3 | Uses numbers to 9,999; learns Roman numerals up to twelve; recognizes the concept of odd and even numbers. | Adds and subtracts up to three digit numbers with regrouping; estimates answers; adds series of one digit numbers in columns form; uses multiplication tables up to ten; multiplies up to three digits by one digit numbers with regrouping; uses forms and notation for division; divides up to three digit by one digit numbers with remainders. |

BASIC MATHEMATICS PROGRAM

OVERVIEW

| MONEY and TIME | MEASUREMENT and GEOMETRY | FRACTIONS |
|---|---|---|
| Learns coins and simple vocabulary for time relationships. | Recognizes size, shapes, direction, and relationships. | |
| Recognizes coins; assigns appropriate values and combines them to make change; recognizes labels for days, months, seasons, and appropriate numbers of each; identifies terms for time and tells time to the half-hour. | Develops concept of linear and liquid measurement, mass/weight, and temperature using both the English and metric systems; recognizes and reproduces basic geometrical shapes. | Divides part of whole; recognizes simple terms and associates them with figures. |
| Associates equivalent values of money and makes change up to 25 cents; sequences days, months, seasons; reads a calendar; tells time to five minute intervals; reads and writes notation for time; recognizes varying terms for equivalent terms. | Recognizes specific units of linear and liquid measurement, mass/weight, and temperature involving the English and metric systems; uses perimeter and area; recognizes additional geometrical shapes; identifies shapes of varying sizes. | Recognizes, reads, and writes terms and symbols; associates parts of visual shapes and sets; equates fractions to the whole. |
| Associates equivalent values of money and makes change up to ten dollars; recognizes terms and notation for money; adds and subtracts up to ten dollars; multiplies money by one digit; identifies equivalent parts of time to minutes in an hour; tells time to one minute intervals; solves computational problems using time. | Continues development of units of measurement; works conversion problems within each system; recognizes various symbols of measurement units; expands recognition and use of geometry to include rays, angles, curved and straight lines. | Divides shapes and sets into fractional parts; recognizes terms and symbols beyond one fractional part; adds fractions of like denominator. |

BASIC MATHEMATICS PROGRAM

OVERVIEW

| GRADE | NUMERATION | BASIC OPERATIONS (Add., Sub., Mul., Div.) |
|---|---|---|
| 4 | Uses numbers to 1,000,000; reads Roman numerals up to 500; rounds off numbers. | Adds up to six digit numbers and checks; groups by ten in column addition; subtracts up to four digit numbers and checks; recognizes terms for parts of addition, subtraction, multiplication and division; multiplies up to three digit by two digit numbers and checks; recognizes uses of zero in division. |
| 5 | Recognizes numbers beyond 1,000,000; reads Roman numerals up to 1,000; uses powers of ten; deals with prime and composite numbers; is aware of other number bases. | Reinforces addition and subtraction of whole numbers; multiplies up to three digit by three digit numbers and by multiples of 1,000; recognizes the use of the distributive property in multiplication; divides up to five digit by two digit numbers expressing remainders as fractional parts; divides by multiples of 10. |
| 6 | Uses prime factors and greatest common factor; is aware of prime numbers up to 500. | Reinforces addition, subtraction, multiplication, and division of whole numbers; multiplies by multiples of 1,000; uses short division with one digit divisors; divides by multiples of 100; uses rules of divisibility for two and five. |

BASIC MATHEMATICS PROGRAM

OVERVIEW

| MONEY and TIME | MEASUREMENT and GEOMETRY | FRACTIONS |
|---|---|---|
| Adds and subtracts money up to 100 dollars; multiplies money up to three digits by one digit; identifies equivalent parts of time to seconds in a minute; reinforces computational problems using time. | Solves computational problems involving linear and liquid measurement and temperature; uses concept of estimation in measurement; recognizes quadrilaterals; uses term length, width, diameter, area, and perimeter; recognizes graphing terms; reads and interprets graphs. | Identifies numerator and denominator; subtracts fractions of like denominator; uses terms and concepts of proper, improper, and mixed numbers and solves problems with them; converts improper fractions to mixed numbers, recognizes zero value in fractions. |
| Adds and subtracts money and solves two-step problems with combining money and making change; multiplies money up to three digits by two digits; divides money by one and two digit divisors; develops concept of standard and daylight savings time; reinforces computational problems using time. | Develops concept of metric prefixes; recognizes use of abbreviations in English and metric systems; reinforces computational problems in measurement; recognizes polygons; uses compass and protractor; recognizes and reads various types of graphs. | Converts proper fractions into lowest terms; adds and subtracts fractions with unlike denominators; multiplies and divides fractions; uses concept of decimals; adds and subtracts decimals; multiplies decimals by whole numbers. |
| Adds, subtracts, and multiplies money; divides money by two digit divisors; reinforces computational problems using time. | Reinforces computational problems involving measurement and the use of measuring devices; recognizes different types of angles and lines; reproduces simple bar and line graphs; reads tables. | Adds, subtracts, multiplies and divides various combinations of fractions, mixed and whole numbers; recognizes decimals up to thousandths; adds, subtracts, multiplies, and divides various combinations of decimals and whole numbers; develops concept of percent and converts fractions and decimals to percent. |

BASIC MATHEMATICS PROGRAM

OVERVIEW

| GRADE | NUMERATION | BASIC OPERATIONS (Add., Sub., Mul., Div.) |
|---|---|---|
| 7 | Uses least common multiple; reinforces previous numeration concept and skills. | Reinforces addition, subtraction, multiplication, and division of whole numbers; multiplies by multiples of 1,000; uses short division with one digit divisor; divides by multiples of 100; uses rules of divisibility for two and five. |
| 8 | Recognizes integers; reinforces all previous numeration concept and skills. | Reinforces addition, subtraction, multiplication, and division of whole numbers and all operations. |
| 9 | Developes use of absolute value and negative numbers; uses roots of numbers; reinforces previous numeration concepts and skills. | Reinforces addition, subtraction, multiplication, and division of whole numbers and all rules, terms, and operations; uses mental computations; uses four operations with integers. |

BASIC MATHEMATICS PROGRAM

OVERVIEW

| MONEY and TIME | MEASUREMENT and GEOMETRY | FRACTIONS |
|---|---|---|
| Applies basic operations with money involving finding interest, sales problems, marketing problems, and finding commission; reinforces computational problems using time. | Reinforces computational problems involving measurement and the use of measuring devices; converts Celsius to Fahrenheit system and vice-versa; continues development of angles; reproduces and constructs picture, bar, and line graphs; reads circle graphs. | Reinforces all concepts and basic operations with fractions and decimals; recognizes ratio and proportion; recognizes formula for finding percentage and uses proportion in percentage. |
| Reinforces basic operations with money including use of checking accounts; reinforces computational problems using time. | Reinforces computational problems involving measurement and the use of measuring devices; calculates circumference of a circle and volume of various objects; plots points on a coordinate plane; reads road maps. | Reinforces all concepts and basic operations with fractions, decimals, and percentage. |
| Reinforces basic operations with money; reinforces computational problems using time. | Reinforces computational problems involving measurement and the use of measuring devices; reinforces the use of various geometrical shapes, concepts, and operations. | Reinforces all concepts and basic operations with fractions, decimals, and percentage. |

BASIC MATHEMATICS PROGRAM

OVERVIEW

GRADE 10

FUNDAMENTAL MATHEMATICAL SKILLS

| NUMERATION | BASIC OPERATIONS | FRACTIONS |
|---|---|---|
| Reinforces previous topics in numeration; finds roots of numbers; uses the digtial calculator. | Reinforces previous topics; computes mentally; performs all operations with signed numbers; solves linear equations. | Reinforces previous topics. |

PRACTICAL APPLICATIONS

| CONSUMER GOODS and SERVICES | TAXES | MEASUREMENT (GEOMETRY) |
|---|---|---|
| Reinforces mental monetary computations; computes discounts and discount rates; reads and interprets sales receipts; differentiates between types of stores and their pricing practices; compares quality and price of various products. | Calculates sales tax; begins to complete income tax form. | Reinforces graphs; reinforces angles; reinforces the English and the metric systems of measurement; works with tables and maps; constructs scale drawings; works with various measuring instruments for field measurements; works with household weights and measurements. |
| **TRANSPORTATION** | **INSURANCE** | **PERSONAL INCOME** |
| Reads road maps. | Understands school insurance plan. | Calculates job incomes; calculates payroll deductions; reads and understands payroll stubs. |
| **BANKING and FINANCE** | | |
| Uses a checking account; uses a savings account; recognizes types of banks, loans & loan institutions. | | |

BASIC MATHEMATICS PROGRAM

OVERVIEW

GRADE 11

FUNDAMENTAL MATHEMATICAL SKILLS

| NUMERATION | BASIC OPERATIONS | FRACTIONS |
|---|---|---|
| Reinforces previous topics; uses procedure for rounding off numbers in practical applications; uses the algorithm to find the square roots; computes with a digital calculator. | Reinforces previous topics; demonstrates mental computations; applies short cuts for multiplication; reinforces the computations with signed numbers; solves linear equations. | Reinforces previous topics. |

PRACTICAL APPLICATIONS

| CONSUMER GOODS and SERVICES | TAXES | MEASUREMENT (GEOMETRY) |
|---|---|---|
| Reinforces previous topics; understands and uses various types of credit agreements; understands credit ratings; understands purchasing agreements; uses mathematics skills effectively in leisure time activities. | Calculates sales tax; works with various income tax forms; understands real estate taxes. | Reinforces previous topics; applies the knowledge of geometric figures to practical situations; demonstrates a knowledge of probability. |
| **TRANSPORTATION** | **INSURANCE** | **PERSONAL INCOME** |
| Calculates fares; demonstrates a knowledge of automobile ownership. | Understands school insurance plan, life insurance, and automobile insurance. | Reinforces previous topics; writes a budget; demonstrates a knowledge of retirement income. |
| **BANKING AND FINANCING** | | |
| Reinforces previous topics; uses checks; understands special accounts and services; recognizes types of loans and loan institutions; calculates interest on loan. | | |

BASIC MATHEMATICS PROGRAM

OVERVIEW

GRADE 12

FUNDAMENTAL MATHEMATICAL SKILLS

| NUMERATION | BASIC OPERATIONS | FRACTIONS |
|---|---|---|
| Reinforces previous topics. | Reinforces previous topics. | Reinforces previous topics. |

PRACTICAL APPLICATIONS

| CONSUMER GOODS and SERVICES | TAXES | MEASUREMENT (GEOMETRY) |
|---|---|---|
| Reinforces previous topics; recognizes impacts or inflationary trends; relates wholesale and retail prices; identifies effects of tarffis and trade laws on the economy; obtains and evaluates estimates on services and products. | Reinforces previous topics; demonstrates a knowledge of other types of taxes. | Reinforces previous topics. |
| **TRANSPORTATION** | **INSURANCE** | **INVESTMENTS** |
| Reinforces previous topics; calculates vehicle leasing costs. | Reinforces previous topics; understands homeowners' insurance, medical insurance plans, mortgage insurance plans, renters' insurance, unemployment insurance, disability, income protection plans, and travel insurance. | Understands bonds, stocks, and other forms of investment; calculates interest and dividends; reads market reports. |
| **BANKING AND FINANCING** | **HOUSING COSTS** | **MUNICIPAL FINANCING** |
| Reinforces previous topics; understands trust funds. | Reads meters; calculates utility bills; interprets rental and mortgage agreements; calculates interest on mortgages. | Reads and interprets budgets; understands municipal financing regulations; traces sources of municipal income; interprets graphs and charts relating to municipal budgets. |

TEACHING MATHEMATICS. . . .HOW TO-

--Discover what the student knows

--Teach what is not known

--Start with the concrete

--Go to the visual

--Use symbols last

--Make mathematics meaningful

--Apply to real life

--Using is remembering

--Not using is losing

--Reinforce interestingly

--Allow options for solving problems

--Aim for quality, not quantity

--Relate mathematics to other subjects

--Remember the competencies

&

DON'T

TRY

2

DO

2

MUCH

2

SOON

| GRADE K<br>NUMERATION | Level of Ach. |
|---|---|
| Recognizes and identifies sets of objects. . . . . | K |
| Identifies and distinguishes between sets containing one object and more than one object. . . . . | M |
| Distinguishes and demonstrates numerical values of one and more than one. . . . . | M |
| Correspondence . . . . . | K |
| Demonstrates knowledge of and the relationships of the following through correct oral use:<br><br>more/less/same number<br>bigger/smaller<br>not equal/not same | |
| Recognizes relationships between sets and numbers of objects. . . . . | Aw |
| Recognizes, identifies, and uses numbers 0-10 . . . . . | Ap |
| Aurally<br>Orally/Counting<br>Reading<br>Writing | |
| Recognizes, identifies, and uses numbers 10-30. . . . . | Aw |
| Aurally<br>Orally/Counting | |
| Recognizes ordinal numbers(first to fifth). . . . . | Aw |
| Aurally<br>Orally | |
| **ADDITION** | |
| Identifies number of objects within sets and matches sets of like number of objects. . . . . | Ap |
| Labels sets by number of objects within . . . . . | Ap |
| Demonstrates concept of "add to" by combining sets. . . . . | Ap |
| Combines sets and objects equal to sums of 10 or less . . . . . | Ap |

| GRADE K<br>SUBTRACTION | Level of Ach. |
|---|---|
| Demonstrates concepts of "taking away" using sets. . . . . | Aw |
| **FRACTIONS** | |
| Recognizes that a whole can be divided into parts. . . . . | Aw |
| **MONEY** | |
| Recognizes penny, nickel, and dime. . . . . | K |
| Recognizes quarter and half dollar. . . . . | Aw |
| **TIME** | |
| Develops concept of now, after, before. . . . . | K |
| Develops concept of today, tomorrow, yesterday . . . . . | K |
| Recognizes and labels days. . . . . | Aw |
| months. . . . | Aw |
| seasons . . . | K |
| weeks . . . . | Aw |
| years . . . . | Aw |
| **MEASUREMENT** | |
| Recognizes relative placement in distance: far/near . . . . . | M |
| here/there . . . . . | M |
| long/short . . . . . | M |
| Differentiates between full and empty . . . . . | M |

| GRADE K<br>GEOMETRY | Level of Ach. |
|---|---|
| Discriminates objects by: | |
| size | K |
| shape | K |
| Selects proper direction: | |
| left/right | K |
| up/down | K |
| over/under | K |
| in/on/around | K |
| before/after | K |
| next to | K |
| above/below | K |
| in/between | K |
| Recognizes shapes: | |
| circle | K |
| triangle | K |
| square | K |
| rectangle | K |

GRADE K
GEOMETRY (cont.)
Level of Ach.

# Mis-Digit

| GRADE 1<br>NUMERATION | Level of Ach. |
|---|---|
| Recognizes and identifies sets of objects. . . . . | Ap |
| Identifies and distinguishes between sets containing one object and more than one object. . . . . | R |
| Recognizes relationships between sets and numbers of objects . . . . | K |
| Correspondence. . . . . | Ap |
| Demonstrates knowledge of and the relationships of the following through correct oral use: . . . . . | Ap |
| more/less/same number<br>bigger/smaller<br>not equal/not same | |
| Recognizes, identifies, and uses (aurally, orally, reading, writing) number groupings of: | |
| 0-10 . . . . . | M |
| 10-19 . . . . . | M |
| 20-29 . . . . . | Ap |
| 30-50 . . . . . | Ap |
| 50-99 . . . . . | K |
| Recognizes ordinal numbers (first to twentieth): . . . . . | Aw |
| aurally<br>orally | |
| Counts by: | |
| 2's to 20 . . . . . | K |
| 5's to 50 . . . . . | K |
| 10's to 100. . . . . | K |
| Recognizes and reads a number line (0 to 20) . . . . . | K |
| Distinguishes between amounts demonstrating greater than and less than | |
| Recognizes relative values of numbers . . . . . | Ap |
| Recognizes symbols (>, <, =). . . | K |
| Regroups numbers by sorting ones and tens (place value). . . . . | K |

| GRADE 1<br>NUMERATION (cont.) | Level of Ach. |
|---|---|
| Recognizes terms for place value (ones and tens). . . . . | K |
| Recognizes numbers before, between, and after: | |
| 0-20 . . . . . | M |
| 20-50 . . . . . | Ap |
| 50-99 . . . . . | K |
| **ADDITION** | |
| Recognizes the association of sets and objects within sets. . . . . | M |
| Labels sets by number of objects within . . . . . | M |
| Combines sets and objects equaling sums of 10 or less . . . . . | M |
| Recognizes and uses computational patterns . . . . . | Ap |
| horizontally . . . . . | Ap |
| vertically . . . . . | Ap |
| Recognizes and uses following notation symbols:. . . . . | Ap |
| (-)<br>(+) | |
| Adds whole numbers with sums of 10 or less. . . . . | M |
| horizontally . . . . . | M |
| vertically . . . . . | M |
| Finds missing addends with sums of 19 or less . . . . . | Ap |
| Solves story problems with sums of 10 or less . . . . . | Ap |
| Adds whole numbers with sums of 19 or less. . . . . | K |
| horizontally . . . . . | K |
| vertically . . . . . | K |
| Finds missing addends with sums of 19 or less . . . . . | K |
| Solves story problems with sums of 19 or less . . . . . | K |
| Add two digit numbers with no regrouping . . . . . | K |

| GRADE 1 SUBTRACTION | Level of Ach. |
|---|---|
| **Sets** | |
| Demonstrates concept of taking away using sets. . . . . | M |
| Labels sets by number of objects within . . . . . | M |
| Finds differences using sets with less than 10. . . . . | Ap |
| Recognizes and uses computational patterns. . . . . | Ap |
| horizontally . . . . . | Ap |
| vertically . . . . . | Ap |
| Recognizes and uses following notation symbols: | |
| (-). . . . . | Ap |
| (=). . . . . | Ap |
| Subtracts the whole numbers with differences less than 10 . . . . . | Ap |
| horizontally . . . . . | Ap |
| vertically . . . . . | Ap |
| Finds missing numbers in subtraction equations using numbers less than 10. . . . . | Ap |
| Solves a story problem with above skills . . . . . | K |
| Subtracts whole numbers with differences less than 20. . . . . | K |
| horizontally. . . . . | K |
| vertically. . . . . | K |
| Finds missing number in subtraction equation using numbers less than 20. . . . . | Aw. |
| Solves story problems with above skills . . . . . | Aw |
| Subtract two digit numbers with no regrouping | |

| GRADE 1 FRACTIONS | Level of Ach. |
|---|---|
| Recognizes that a whole can be divided into parts. . . . . | Aw |
| Recognizes the following terms: . . | K |
| one-half<br>one-third<br>one-fourth | |
| Associates terms with figures . . . | K |

**MONEY**

| | |
|---|---|
| Recognizes coins. . . . . | Ap |
| penny<br>nickel<br>dime<br>quarter<br>half dollar | |
| Assigns values to penny, nickel, dime. . . . . | Ap |
| Combines coins to values up to 19¢. | K |
| Makes change. . . . . | Aw |

**TIME**

| | |
|---|---|
| Develops concept of and uses now, before, after . . . . . | Ap |
| Develops concept of and uses today, tomorrow, yesterday . . . . . | Ap |
| Recognizes and labels days. . . . . | K |
| months. . . . | K |
| seasons . . . | Ap |
| weeks . . . . | K |
| years . . . . | K |
| Identifies number of days in a week, months in a year. . . . . | K |

| GRADE 1<br>TIME (cont.) | Level of Ach. |
|---|---|
| Recognizes terms hour, half-hour, o'clock, face, hands. . . . . | K |
| Tells time to hour and half-hour intervals . . . . . | Ap |

MEASUREMENT

| | |
|---|---|
| Recognizes relative placement in distance: | |
| far/near. . . . . | M |
| here/there. . . . . | M |
| long/short. . . . . | R |
| above/below . . . . . | M |
| left/right. . . . . | Ap |
| Develops concept of comparative linear measurement. . . . . | Aw |
| Recognizes standard units of measurement: | |
| metric | |
| centimeter (cm). . . . . | Aw |
| meter (m). . . . . | Aw |
| English | |
| inch (in.) . . . . . | Aw |
| foot (ft.) . . . . . | Aw |
| yard (yd.) . . . . . | Aw |
| Develops concept of liquid measurement: | |
| metric | |
| liter (l). . . . . | Aw |
| English | |
| cup (c.) . . . . . | Aw |
| pint (pt.) . . . . . | Aw |
| quart (qt.). . . . . | Aw |
| Develops concept of mass/weight . . | Aw |
| Recognizes standard units of measurement: | |
| metric | |
| kilogram (kg). . . . . | Aw |
| English | |
| pound (lb.) . . . . . | Aw |
| Develops concept of temperature . . | Aw |

| GRADE 1<br>MEASUREMENT (cont.) | Level of Ach. |
|---|---|
| Recognizes standard units of measurement: | |
| metric | |
| Celsius (C). . . . . | Aw |
| English | |
| Fahrenheit (F) . . . . . | Aw |

GEOMETRY

| | |
|---|---|
| Identifies shapes | |
| circle . . . . . | M |
| square . . . . . | M |
| triangle . . . . . | M |
| rectangle. . . . . | M |
| Reproduces shapes | |
| circle . . . . . | Ap |
| square . . . . . | K |
| triangle . . . . . | K |
| rectangle. . . . . | K |
| Differentiates between open and closed figures. . . . . | K |
| Reproduces and draws open and closed figures. . . . . | K |
| Identifies points, lines, and line segments . . . . . | K |
| Recognizes 3-D shapes:. . . . . | Aw |
| cyclinder | |
| cube | |
| sphere | |

Mis-Digit

| GRADE 2 NUMERATION | Level of Ach. |
|---|---|
| Correspondence | M |
| Demonstrates knowledge of and the relationships of the following through correct oral use: | M |
| more/less/same number | |
| bigger/smaller | |
| not equal/not same | |
| Recognizes relationships between sets and numbers of objects | Ap |
| Recognizes, identifies and uses (aurally, orally, reading, writing) number groupings of: | |
| 0 to 100 | Ap |
| 100 to 200 | Ap |
| 201 to 500 | K |
| Recognizes and reads three digit numbers up to 999 | K |
| Recognizes, verbalizes and reads ordinal numbers | |
| first to twentieth | Ap |
| twentieth to hundredth | K |
| Counts by: | |
| 2's to 20 | Ap |
| 5's to 100 | Ap |
| 10's to 100 | Ap |
| 10's to 500 | K |
| Reads and uses number lines | Ap |
| Distinguishes between amounts demonstrating greater than, less than and equal to | |
| Recognizes symbols( $>$, $<$, $=$, $\neq$) | Ap |
| Recognizes relative values of numbers | |
| two digit numbers | Ap |
| three digit numbers | Ap |
| Place Value | |
| Recognizes terms for place value (One, tens, hundreds) | Ap |
| Recognizes place value in 2 digit numbers | Ap |
| Recognizes place value in 3 digit numbers | Ap |

| GRADE 2 NUMERATION (cont.) | Level of Ach. |
|---|---|
| Rewrites numbers using expanded notation form | |
| 2 digit numbers | K |
| 3 digit numbers | K |
| ADDITION | |
| Combines sets and objects equaling sums of 19 or less | M |
| Recognizes and uses computational patterns | |
| horizontally | M |
| vertically | M |
| Recognizes and uses following notation symbols: | M |
| (+) | |
| (=) | |
| Adds whole numbers with sums of 10 or less | R |
| horizontally | R |
| vertically | R |
| Finds missing addends with sums of 10 or less | M |
| Solves a story problem with sums of 19 or less | Ap |
| Adds whole numbers with sums of 10 | K |
| Adds whole numbers with sums of 19 or less | K |
| horizontally | Ap |
| vertically | Ap |
| by regrouping with tens and ones | K |
| Finds missing addends with sums of 19 or less | Ap |
| Solves story problems with sums of 19 or less | Ap |

| GRADE 2<br>ADDITION (cont.) | Level of Ach. |
|---|---|
| Recognizes the use of the commutative property. . . . . | Aw |
| Recognizes the use of the associative property . . . . . | Aw |
| Adds two digit whole numbers without regrouping. . . . . | Ap |
| Solves story problem using above skill . . . . . | K |
| Adds three digit whole numbers without regrouping. . . . . | Ap |
| Solves story problems using above skill . . . . . | K |
| Adds two digit whole numbers with regrouping. . . . . | K |
| Solves story problems using above skill . . . . . | K |
| Uses expanded notation with two digit whole numbers with regrouping. . . . . | K |

SUBTRACTION

Sets

| | |
|---|---|
| Finds differences using sets with less than 19 . . . . . | Ap |
| Recognizes and uses computational patterns . . . . . | Ap |
| horizontally. . . . . | Ap |
| vertically. . . . . | Ap |
| Recognizes and uses following notation symbols: . . . . . | Ap |
| (-) | |
| (=) | |
| Subtracts whole numbers with differences less than 9 . . . . . | M |
| horizontally. . . . . | M |
| vertically. . . . . | M |

| GRADE 2<br>SUBTRACTION (cont.) | Level of Ach. |
|---|---|
| Solves story problems with above skills. . . . . | K |
| Recognizes use of 0 . . . . . | Ap |
| ex. 4-4=0<br>4-0=4 | |
| Subtracts whole numbers with differences less than 19. . . . . | Ap |
| horizontally. . . . . | Ap |
| vertically. . . . . | Ap |
| Finds missing numbers in subtraction equation using numbers less than 19 . . . . . | Ap |
| Solves story problems using above skills. . . . . | K |
| Subtracts two digit whole numbers without regrouping. . . . . | Ap |
| Solves story problems using above skills. . . . . | K |
| Subtracts three digit whole numbers without regrouping. . . . . | Ap |
| Solves story problems using above skill . . . . . | K |
| Subtracts two digit whole numbers with regrouping . . . . . | K |
| Solves story problems using above skill . . . . . | K |
| Uses expanded notation with two digit subtraction with regrouping. . . . . | K |

MULTIPLICATION

| | |
|---|---|
| Demonstrates repeated addition using sets. . . . . | K |
| Uses number line to find multiples. | K |
| Recognizes and uses following notation symbols. . . . . | Ap |
| (x) . . . . . | Ap |
| (=) . . . . . | Ap |

| GRADE 2<br>MULTIPLICATION (cont.) | Level of Ach. |
|---|---|
| Recognizes and uses computational patterns | Ap |
| horizontally | Ap |
| vertically | Ap |
| Recognizes the property of 0 | K |
| Recognizes the identity property of 1 | K |
| Solves multiplication problems using times tables up to and including 5's | K |
| Solves story problems for above skills | Aw |

| GRADE 2<br>MONEY | Level of Ach. |
|---|---|
| Recognizes money. | |
| Penny | M |
| Nickel | M |
| Dime | M |
| Quarter | M |
| Half-dollar | Ap |
| Dollar | Ap |
| Associates values of money and equivalent values | Ap |
| Makes change with amounts of 25¢ or less | Ap |
| Solves story problems | K |

## FRACTIONS

| | |
|---|---|
| Divides parts of the whole | Ap |
| Recognizes the following terms and symbols: | Ap |
| one-half, one-third, one-fourth | |
| orally, reading, writing | |
| Associates parts of visual shapes | Ap |
| Associates parts of visual sets | K |
| Recognizes the following terms and symbols: | |
| 2/2, 2/3, 3/3, 2/4, 3/4, 4/4 | |
| Equates fractions to whole | K |
| 2/2=1, 3/3=1, 4/4=1 | |

## TIME

| | |
|---|---|
| Recognizes and uses labels for days, months, seasons | Ap |
| Sequence in proper order: | |
| days | Ap |
| months | K |
| seasons | Ap |
| Identifies number of days in a week, number of months in a year, number of days in a year | K |
| Reads a calendar | K |
| Recognizes and uses terms-hour, half-hour, minute, o'clock, face, hands | Ap |
| Tells time with hour, half-hour, and five minute intervals | |
| Orally | Ap |
| Reading | Ap |
| Pictorially | Ap |
| Reads notation for time | Ap |
| Writes notation for time | K |
| Recognizes and identifies varying terms for equivalent times | |
| half-past | K |
| quarter of, after | K |
| of, after, before, past | K |

| GRADE 2 MEASUREMENT | Level of Ach. |
|---|---|
| Develops concept of comparative linear measure. . . . . | K |
| Recognizes standard units of measurement: | |
| metric | |
| centimeter (cm) . . . . | K |
| meter (m) . . . . . | K |
| English | |
| inch (in.). . . . . | K |
| foot (ft.). . . . . | K |
| yard (yd.). . . . . | K |
| Uses linear measurements | |
| Finds perimeter . . . . . | K |
| Finds area. . . . . | K |
| Develops concept of liquid measurement. . . . . | K |
| Recognizes standard units of measurement . . . . . | K |
| metric | |
| liter (l) . . . . . | K |
| English | |
| cup (c.). . . . . | K |
| pint (pt.). . . . . | K |
| quart (qt.) . . . . . | K |
| Develops concept of mass/weight . . | K |
| Recognizes standard units of measurement | |
| metric | |
| kilogram (kg) . . . . . | K |
| English | |
| pound (lb.) . . . . . | K |
| Develops concept of temperature . . | K |
| Recognizes standard units of measurement | |
| metric | |
| Celsius (C) . . . . . | K |
| English | |
| Fahrenheit (F). . . . . | K |

| GRADE 2 GEOMETRY | Level of Ach. |
|---|---|
| Identifies shapes | |
| circle. . . . . | M |
| square. . . . . | Ap |
| triangle. . . . . | Ap |
| rectangle . . . . . | Ap |
| Reproduces shapes | |
| circle. . . . . | M |
| square. . . . . | M |
| triangle. . . . . | M |
| rectangle . . . . . | M |
| Identifies figures | |
| cylinder. . . . . | Aw |
| cone. . . . . | Aw |
| cube. . . . . | Aw |
| sphere. . . . . | Aw |
| pyramid . . . . . | Aw |
| Differentiates between open and closed figures. . . . . | K |
| Reproduces and draws open and closed figures. . . . . | K |
| Identifies points, lines, and line segments. . . . . | K |
| Reproduces and draws points, lines and line segments . . . . . | K |
| Identifies various sizes of similar shapes. . . . . | Ap |
| Identifies straight and curved lines . . . . . | K |

| GRADE 3<br>NUMERATION | Level of Ach. |
|---|---|
| Recognizes relationships between sets and number of objects. . . . . | M |
| Recognizes, identifies and uses (aurally, orally, reading, writing) number groupings of: | |
| 0 to 500 . . . . . | M |
| 500 to 1000. . . . . | Ap |
| 1001 to 2000. . . . . | K |
| 2001 to 9999. . . . . | K |
| Converts verbal numbers to numerical form. . . . . | K |
| Converts numbers to verbal form . . | K |
| Reads and uses number lines (intervals other than one). . . . . | K |
| Place Value | |
| Recognizes terms for place value (ones, tens, hundreds, thousands) . . . . . | Ap |
| Recognizes place value: | |
| in 2 digit numbers. . . . . | M |
| in 3 digit numbers. . . . . | M |
| in 4 digit numbers. . . . . | Ap |
| Rewrites numbers using expanded notation form: | |
| 2 digit numbers . . . . . | M |
| 3 digit numbers . . . . . | M |
| 4 digit numbers . . . . . | Ap |
| Recognizes, verbalizes, reads, and writes ordinal numbers: | |
| first to hundredths . . . . . | Ap |
| hundredths to thousandths . . . | K |
| Counts by: | |
| 2's to 20. . . . . | M |
| 5's to 100 . . . . . | M |
| 10's to 500 . . . . . | M |
| Recognizes odd and even numbers . . | K |
| Reads and writes Roman numerals (I to XX) . . . . . | K |

| GRADE 3<br>NUMERATION (cont.) | Level of Ach. |
|---|---|
| Distinguishes between amounts demonstrating greater than, less than, equal to, and not equal to. | |
| Recognizes symbols ($>$, $<$, $=$, $\neq$) | Ap |
| Recognizes relative values of numbers. . . . . | M |
| ADDITION | |
| Combines sets and objects equaling sums of 19 or less . . . . . | R |
| Recognizes and uses computational patterns . . . . . | R |
| horizontally . . . . . | R |
| vertically . . . . . | R |
| Recognizes and uses following notation symbols: . . . . . | R |
| (+)<br>(-) | |
| Adds whole numbers with sum of 19 or less . . . . . | M |
| horizontally . . . . . | M |
| vertically . . . . . | M |
| by regrouping out tens and ones . . . . . | Ap |
| Finds missing addends with sums of 19 or less . . . . . | M |
| Solves story problems with sum of 19 or less . . . . . | Ap |
| Recognizes the use of 0 (identity) | K |
| Recognizes the use of the commutative property. . . . . | K |
| Recognizes the use of the associative property. . . . . | K |
| Adds two digit whole numbers without regrouping . . . . . | M |
| Solves story problems using above skill. . . . . | Ap |

| GRADE 3<br>ADDITION (cont.) | Level of Ach. |
|---|---|
| Adds two digit whole numbers with regrouping. . . . . | Ap |
| Solves story problems using above skill . . . . . | Ap |
| Uses expanded notation with two digit whole numbers with regrouping. . . . . | Ap |
| Finds missing addends in two digit addition. . . . . | K |
| Solves story problems using above skill . . . . . | Ap |
| Adds three digit whole numbers with regrouping. . . . . | Ap |
| Solves story problems using above skill . . . . . | Ap |
| Uses expanded notation with three digit whole numbers with regrouping . . . . . | Ap |
| Adds one digit number in column form. . . . . | K |
| Estimates sums. . . . . | Aw |
| Checks addition by using subtraction . . . . . | Ap |

## SUBTRACTION

| | |
|---|---|
| Finds differences using sets with less than 20. . . . . | M |
| Recognizes and uses computational patterns. . . . . | M |
| horizontally. . . . . | M |
| vertically. . . . . | M |
| Recognizes and uses the following notation symbols: | |
| (-) . . . . . | R |
| (=) . . . . . | R |

| GRADE 3<br>SUBTRACTION (cont.) | Level of Ach. |
|---|---|
| Recognizes use of 0. . . . . | Ap |
| Subtracts whole numbers with differences less than 20 . . . . . | M |
| horizontally . . . . . | M |
| vertically . . . . . | M |
| Finds missing numbers in subtraction equation using numbers less than 20 | M |
| Solves story problems with above skills . . . . . | Ap |
| Subtracts two digit whole numbers without regrouping . . . . . | Ap |
| Solves story problems with above skills . . . . . | Ap |
| Subtracts three digit whole numbers without regrouping. . . . . | Ap |
| Solves story problems with above skills . . . . . | Ap |
| Subtracts two digit whole numbers with regrouping. . . . . | Ap |
| Solves story problems with above skills . . . . . | Ap |
| Uses expanded notation with two digit subtraction with regrouping. | Ap |
| Subtracts three digit whole numbers with regrouping. . . . . | K |
| Solves story problems with above skills . . . . . | K |
| Uses expanded notation with three digit subtraction with regrouping. | K |
| Checks subtraction by using addition . . . . . | Ap |

## MULTIPLICATION

| | |
|---|---|
| Demonstrates repeated addition using sets . . . . . | Ap |

| GRADE 3<br>MULTIPLICATION (cont.) | Level of Ach. |
|---|---|
| Uses number line to find multiples. . . . . | Ap |
| Recognizes and uses following notation symbols:. . . . . | M |
| (x). . . . . | M |
| (=). . . . . | M |
| Recognizes and uses computational patterns . . . . . | Ap |
| horizontally . . . . . | Ap |
| vertically . . . . . | Ap |
| Recognizes the property of 0 . . . | Ap |
| Recognizes the identity property of 1 . . . . . | Ap |
| Solves multiplication problems using times tables up to and including 10's . . . . . | Ap |
| Solves multiplication problems using times tables from 6's to 10's . . . . . | K |
| Solves story problems for above skills . . . . . | K |
| Multiplies two digit whole numbers by one digit whole number without regrouping . . . . . | Ap |
| Solves story problems for above skills . . . . . | K |
| Multiplies two digit whole numbers by one digit whole number with regouping . . . . . | Ap |
| Multiplies three digit whole numbers by one digit whole number with regrouping. . . . . | Ap |
| Solves story problems for above skills . . . . . | K |
| Recognizes the use of the commutative property. . . . . | Aw |
| Recognizes the use of the associative property. . . . . | Aw |
| Finds missing factors. . . . . | Ap |
| Checks multiplication by using division . . . . . | Ap |

| GRADE 3<br>DIVISION | Level of Ach. |
|---|---|
| Divides sets into subsets. . . . . | Ap |
| Performs repeated subtraction. . . | Ap |
| Recognizes and uses following notation symbols: | |
| ÷ . . . . . | Ap |
| ⟌ . . . . . | Ap |
| Divides with no remainders employing computational patterns of: | |
| A one digit whole number into a one digit whole number . . . | Ap |
| A one digit whole number into a two digit whole number without regrouping . . . . . | Ap |
| A one digit whole number into a three digit whole number without regrouping . . . . . | Ap |
| Recognizes odd and even numbers. . | K |
| Divides with remainders using one digit divisors into. . . A one digit whole number. . . . . | Ap |
| A two digit whole number without regrouping. . . . . | Ap |
| A three digit whole number without regrouping. . . . . | Ap |
| Divides whole numbers with regrouping | |
| a one digit whole number into a two digit whole number with. . | |
| no remainders. . . . . | Ap |
| remainders . . . . . | Ap |
| Checks division by using multiplication. . . . . | Ap |

| GRADE 3<br>FRACTIONS | Level of Ach. |
|---|---|
| Divides parts of the whole. . . . . | Ap |
| Recognizes the following terms and symbols: | |
| one-half, one-third, one-fourth one-sixth, one-eighth | |
| orally<br>reading<br>writing | |
| Associates parts of visual shapes . | Ap |
| Divides shapes into fractional parts . . . . . | Ap |
| Associates parts of visual sets . . | Ap |
| Divides sets into fractional parts . . . . . | Ap |
| Recognizes terms and symbols beyond one fractional part (2/2, 2/3, 3/3, ...8/8). . . . . | Ap |
| Equates fractions to whole 2/2=1, 3/3=1, 4/4=1, 6/6=1, 8/8=1. . . . . | Ap |
| Recognizes equivalent fractions pictorially . . . . . | K |
| Adds fractions of like denominators (sums up to one whole). . . . | Ap |
| Subtracts fractions of like denominator- | |
| difference up to one whole. . . | Ap |
| Recognizes and uses terms: | |
| numerator and denominator . . . | Aw |

MONEY

| | |
|---|---|
| Recognizes money | |
| Penny . . . . . | R |
| Nickel. . . . . | R |
| Dime. . . . . | R |
| Quarter . . . . . | R |
| Half-dollar . . . . . | M |
| Dollar. . . . . | M |
| Five dollar . . . . . | M |
| Ten dollar. . . . . | M |

| GRADE 3<br>MONEY (cont.) | Level of Ach. |
|---|---|
| Associates value of money and equivalent values. . . . . | Ap |
| Combines coins to values up to one dollar . . . . . | Ap |
| Physically<br>Orally | |
| Combines money to values up to $10.00 . . . . . | Ap |
| Physically<br>Orally | |
| Makes change up to $10.00 by addition and counting up . . . . . | Ap |
| Physically<br>Orally | |
| Recognizes and uses terms and notation (orally, reads, writes) | |
| dollar - $ . . . . . | K |
| cents - ¢ . . . . . | K |
| decimal point (.). . . . . | K |
| Translates $ to ¢ to $ (ex. 1¢=$.01). . . . . | K |
| orally<br>reads<br>writes | |
| Adds money using ¢ notation | |
| one digit numbers. . . . . | Ap |
| two digit numbers without regrouping (sums less than one dollar). . . . . | Ap |
| two digit numbers with regrouping (sums less than one dollar) | Ap |
| Adds money using $ notation-sum up to $10.00 | |
| no regrouping. . . . . | Ap |
| with regrouping. . . . . | Ap |

| GRADE 3 MONEY (cont.) | Level of Ach. |
|---|---|
| Subtracts money using ¢ notation | |
| one digit numbers. . . . . | Ap |
| two digit numbers-no regrouping (amounts less than $1.00). . . | Ap |
| two digit numbers with regrouping (amounts less than $1.00). | Ap |
| Subtracts money using $ notation-amounts less than $10.00 | |
| no regrouping. . . . . | Ap |
| with regrouping. . . . . | Ap |
| Multiplies money using $ notation (ex. $.25 x 3 = $.75) | |
| two digits by one digit without regrouping . . . . . | K |
| two digits by one digit with regrouping . . . . . | K |
| Multiplies three digits by one digit | |
| without regrouping . . . . . | K |
| with regrouping. . . . . | K |
| Solves story problems using money. | Ap |

| GRADE 3 TIME (cont.) | Level of Ach. |
|---|---|
| Finds in intervals in- | |
| days. . . . . | Ap |
| weeks . . . . . | K |
| months. . . . . | K |
| years . . . . . | K |
| Reads and writes dates verbally and numerically . . . . . | Ap |
| Recognizes and uses terms- | |
| hour, half-hour . . . . . | M |
| minutes, o'clock. . . . . | M |
| face, hands . . . . . | M |
| A.M., P.M.. . . . . | Ap |
| Tells time in following intervals orally, reading, pictorially | |
| hour and half-hour. . . . . | M |
| five minute and one minute. . . | Ap |
| Reads and writes notation for time. | Ap |
| Recognizes and uses varying terms for equivalent times | |
| half-past . . . . . | Ap |
| quarter of, after . . . . . | Ap |
| of, after, before, past . . . . | Ap |
| Solves computational problems using time. . . . . | Ap |

## TIME

| | |
|---|---|
| Recognizes and uses labels for days, months, seasons. . . . . | M |
| Sequences in proper order-days . . | Ap |
| months . . | Ap |
| seasons . . | M |
| Identifies - | |
| number of days in a week . . . | M |
| number of months in a year . . | M |
| number of days in a year . . . | Ap |
| number of hours in a day . . . | Ap |
| number of minutes in an hour . | Ap |
| Reads a calendar . . . . . | Ap |

## MEASUREMENT

| | |
|---|---|
| Develops concept of comparative linear measure. . . . . | Ap |
| Recognizes standard units of measurement: | |
| metric | |
| centimeter (cm) . . . . . | Ap |
| meter (m) . . . . . | Ap |
| kilometer (km). . . . . | Ap |
| English | |
| inch (in.). . . . . | Ap |
| foot (ft.). . . . . | Ap |
| yard (yd.). . . . . | Ap |
| mile (mi.). . . . . | K |

| GRADE 3<br>MEASUREMENT (cont.) | Level of Ach. |
|---|---|
| Uses linear measurements | |
| Finds perimeter. . . . . | Ap |
| Finds area . . . . . | K |
| Uses length and width. . . . . | Ap |
| Develops concept of liquid measurement . . . . . | Ap |
| Recognizes standard units of measurement: | |
| metric | |
| liter (l). . . . . | Ap |
| English | |
| cup (c.) . . . . . | Ap |
| pint (pt.) . . . . . | Ap |
| quart (qt.). . . . . | Ap |
| gallon (gal.). . . . . | K |
| Develops concept of mass/weight. . | Ap |
| Recognizes standard units of measurement: | |
| metric | |
| kilogram (kg). . . . . | Ap |
| English | |
| pounds (lb.) . . . . . | Ap |
| ounces (oz.) . . . . . | Ap |
| Converts units of metric measure . | Ap |
| Converts units of English measure. | Ap |
| Develops concept of temperature. . | Ap |
| Recognizes the following symbols: | |
| degrees-°. . . . . | Ap |
| C. . . . . | Ap |
| F. . . . . | Ap |
| Recognizes standard units of measurement: | |
| metric | |
| Celsius (C). . . . . | Ap |
| English | |
| Fahrenheit (F) . . . . . | Ap |

| GRADE 3<br>GEOMETRY (cont.) | Level of Ach. |
|---|---|
| Identifies shapes: | |
| circle. . . . . | Ap |
| square. . . . . | Ap |
| triangle. . . . . | Ap |
| rectangle . . . . . | Ap |
| Reproduces shapes: | |
| circle. . . . . | Ap |
| square. . . . . | Ap |
| triangle. . . . . | Ap |
| rectangle . . . . . | Ap |
| Identifies figures: | |
| cyclinder . . . . . | K |
| cone. . . . . | K |
| cube. . . . . | K |
| sphere. . . . . | K |
| Differentiates between open and closed figures. . . . . | Ap |
| Reproduces and draws open and closed figures. . . . . | Ap |
| Identifies points, lines, line segments, rays, angles. . . . . | Ap |
| Reproduces and draws points, lines, line segments, rays, angles . . . . | Ap |
| Identifies points inside, on, and outside of closed figures . . . . . | K |
| Identifies various sizes of similar shapes. . . . . | Ap |
| Identifies straight and curved lines . . . . . | Ap |

| GRADE 4<br>NUMERATION | Level of Ach. |
|---|---|
| Recognizes, identifies, and uses (aurally, orally, reading, writing) number groupings of: | |
| 0 to 10,000 | M |
| 10,000 to 100,000 | Ap |
| 100,000 to 1,000,000 | K |
| Converts verbal numbers to numerical form | Ap |
| Converts numbers to verbal form | Ap |
| Reads and uses number lines | |
| Intervals other than one | Ap |
| Fractional parts | K |
| Place Value | |
| Recognizes, identifies, and uses terms up to millions | Ap |
| Recognizes, identifies, and uses place value | Ap |
| Rewrites numbers using expanded notation form (up to and including 6 digits) | Ap |
| Rounds off numbers to: | |
| nearest tens | Ap |
| nearest hundreds | Ap |
| nearest thousands | Aw |
| nearest ten thousands | Aw (E) |
| nearest hundred thousands | Aw (E) |
| nearest millions | Aw (E) |
| Recognizes, verbalizes, reads and writes ordinal numbers (first to thousandth) | Ap |
| Counts by: | |
| 2's to 20 | R |
| 5's to 100 | R |
| 10's to 500 | R |
| Recognizes odd and even numbers | Ap |
| Distinguishes between amounts demonstrating greater than, less than, equal to, not equal to: | R |
| Recognizes symbols (>, <, =, ≠) | M |
| Recognizes relative values of numbers | M |

| GRADE 4<br>NUMERATION (cont.) | Level of Ach. |
|---|---|
| Reads and writes Roman numerals | |
| (I to XII) | M |
| (XIII to D) | K (E) |
| ADDITION | |
| Adds whole numbers with sums of 19 or less | R |
| horizontally | R |
| vertically | R |
| by regrouping with tens and ones | M |
| Recognizes and uses terms | M |
| sums | M |
| addend | M |
| Recognizes the use of 0 (identity) | Ap |
| Recognizes the use of the commutative property | Ap |
| Recognizes the use of the associative property | Ap |
| Adds two to six digit whole numbers | M |
| with regrouping | M |
| without regrouping | M |
| Using column addition | M |
| Using expanded notation | M |
| Solves story problems using above skill | M |
| Finds missing addends in two digit addition | Ap |
| Solves story problems using above skill | Ap |
| Estimates sums | K |
| Checks addition problems | Ap |
| by adding in reverse | Ap |
| by subtracting | Ap |
| Groups by tens in single digit column addition | K (E) |

| GRADE 4<br>SUBTRACTION | Level of Ach. |
|---|---|
| Recognizes and uses terms. . . . . | Aw |
| subtrahend . . . . . | Aw |
| minuend. . . . . | Aw |
| difference . . . . . | Ap |
| Recognizes uses of 0 . . . . . | Ap |
| regrouping with one zero . . . | K |
| regrouping with consecutive zeros. . . . . | K |
| Subtracts whole numbers with differences less than 20 . . . . . | R |
| horizontally . . . . . | R |
| vertically . . . . . | R |
| Finds missing numbers in subtraction equations using numbers less than 20. . . . . | R |
| Solves story problems with above skills . . . . . | Ap |
| Subtracts two to four digit whole numbers without regrouping . . . . | M |
| Solves story problems with above skills . . . . . | Ap |
| Subtracts two to four digit whole numbers with regrouping. . . . . | Ap |
| Solves story problems with above skills . . . . . | Ap |
| Uses expanded notation with two to four digit subtraction with regrouping . . . . . | Ap |
| Checks subtraction problems. . . . | Ap |
| by using addition. . . . . | Ap |
| Estimates differences. . . . . | K |

| GRADE 4<br>MULTIPLICATION | Level of Ach. |
|---|---|
| Recognizes and uses terms:. . . . . | K |
| factors . . . . . | K |
| product . . . . . | K |
| Demonstrates repeated addition using sets. . . . . | M |
| Uses number line to find multiples. | M |
| Recognizes and uses following notation symbols: . . . . . | R |
| (x) . . . . . | R |
| (=) . . . . . | R |
| Recognizes and uses computational patterns. . . . . | M |
| horizontally. . . . . | M |
| vertically. . . . . | M |
| Recognizes the property of 0. . . . | Ap |
| Recognizes the identity property of 1. . . . . | Ap |
| Solves multiplication problems using times tables up to and including 10's. . . . . | Ap |
| Solves story problems with above skill . . . . . | Ap |
| Multiplies two and three digit whole numbers by one digit whole number without regrouping . . . . . | Ap |
| Multiplies two to four digit whole numbers by one digit whole number with regrouping . . . . . | Ap |
| Multiplies two and three digit whole numbers by two digit whole number with regrouping. . . . . | K |
| Solves story problems with above skills. . . . . | K |
| Recognizes the use of the commutative property . . . . . | K |
| Recognizes the use of the associative property . . . . . | K |
| Checks multiplication problems. . . | Ap |
| by using division . . . . . | Ap |

| GRADE 4<br>DIVISION | Level of Ach. |
|---|---|
| Recognizes and uses the terms: | |
| quotient. . . . . | K |
| divisor . . . . . | K |
| dividend. . . . . | K |
| remainder . . . . . | K |
| Divides sets into subsets . . . . | M |
| Reforms repeated subtraction. . . | M |
| Recognizes and uses the following notation symbols: | |
| ⟌ to ÷ . . . . . | M |
| ÷ to ⟌ . . . . . | M |
| Divides with no remainder: | |
| using one digit divisors | |
| into one digit whole numbers . . . . . | M |
| into two digit whole numbers without regrouping | Ap |
| into three digit whole numbers without regrouping | Ap |
| Divides with remainders: | |
| using one digit divisors | |
| into one digit whole numbers . . . . . | M |
| into two digit whole numbers without regrouping | Ap |
| into three digit whole number without regrouping | Ap |
| Divides without regrouping using one digit divisors into more than two digit whole numbers | |
| without remainders. . . . | Ap |
| with remainders . . . . . | Ap |
| Divides with regrouping using one digit divisors into more than two digit whole numbers | |
| without remainder . . . . | K |
| with remainder. . . . . | K |

| GRADE 4<br>DIVISION (cont.) | Level of Ach. |
|---|---|
| Divides with regrouping using two digit divisors into more than two digit whole numbers | |
| without remainder. . . . . | Ap |
| with remainders. . . . . | Ap |
| Checks division by using multiplication . . . . . | Ap |
| Recognizes use of zero in division | Ap |
| in divisors. . . . . | Ap |
| in dividends . . . . . | Ap |
| in quotients . . . . . | Ap |

## FRACTIONS

(When convenient, teachers are urged to use fractions which appear in practical use:
denominators 1 to 10
multiples of 4 and 10.)

| | |
|---|---|
| Divides parts of a whole . . . . . | M |
| Names fractional parts of wholes and sets . . . . . | M |
| orally | |
| writing | |
| Names and identifies numerator and denominator. . . . . | Ap |
| Equates fractions to whole . . . . 2/2=1, 3/3=1, etc. | Ap |
| Identifies equivalent fractions. . | Ap |
| pictorially | |
| numerically | |
| Adds fractions of like denominators (sums up to one whole) . . . | Ap |
| Subtracts fractions of like denominators (differences less than or equal to one). . . . . | Ap |
| Solves word problems using addition and subtraction of like denominators | Ap |

| GRADE 4<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Recognizes the following terms, concepts, and techniques: | |
| proper/improper | |
| adds and subtracts improper fractions of like denominators. . . . . | Ap |
| improper/mixed numbers | |
| converts improper fractions to mixed numbers. . . . . | Ap |
| adds and subtracts improper fractions of like denominators. | Ap |
| converts answers to mixed numbers . . . . . | Aw |
| converts mixed numbers to improper fractions. . . . . | Aw |
| converts proper fractions into lowest terms . . . . . | Aw |
| Solves word problems using addition and subtraction of improper fractions with like denominators and converting answer to mixed number. . . . . | K |
| Recognizes zero value in fractions. | K |

MONEY

| | |
|---|---|
| Associates values of money and equivalent values . . . . . | M |
| Combines coins to values up to one dollar. . . . . | M |
| Combines money to values up to $10.00. . . . . | Ap |
| Makes change up to $10.00 by addition and counting up | |
| Physically. . . . . | Ap |
| Orally. . . | |
| Recognizes terms and notations for $, ¢, and decimal point . . . . . | Ap |

| GRADE 4<br>MONEY (cont.) | Level of Ach. |
|---|---|
| Translates ¢ to $ and $ to ¢ notation. . . . . | Ap |
| Oral | |
| Read | |
| Write | |
| Adds money using ¢ notation | |
| One digit numbers . . . . . | M |
| Two digits without regrouping (sums less than $1.00). . . . . | M |
| Two digits with regrouping (sums less than $1.00). . . . . | M |
| Adds money using $ notation - sum up to $100.00 | |
| No regrouping . . . . . | Ap |
| With regrouping . . . . . | Ap |
| Subtracts money using ¢ notation-amounts less than $1.00 | |
| One digit . . . . . | M |
| Two digit - no regrouping . . . | M |
| Two digit with regrouping . . . | M |
| Subtracts money using $ notation - amounts less than $100.00 | |
| No regrouping . . . . . | Ap |
| With regrouping . . . . . | Ap |
| Multiplies money using $ notation (Ex. $.25 x 3 = $.75) | |
| Two digits by one digits | |
| No regrouping . . . . . | Ap |
| With regrouping . . . . . | Ap |
| Three digits by one digit | |
| No regrouping . . . . . | Ap |
| With regrouping . . . . . | Ap |
| Solves word problems using money. . | K |

| GRADE 4 TIME | Level of Ach. |
|---|---|
| Sequences months in proper order. . | M |
| Identifies: | |
| Number of days in a week. . . . | Ap |
| Number of months in a year. . . | Ap |
| Number of days in a year. . . . | K |
| Number of hours in a day. . . . | K |
| Number of minutes in an hour. . | K |
| Number of seconds in a minute . | Aw |
| Reads a calendar. . . . . | Ap |
| Converts the following: | |
| days to weeks . . . . . | Ap |
| months to years . . . . . | Ap |
| days to years . . . . . | K (E) |
| hours to days . . . . . | K |
| minutes to hours. . . . . | K |
| seconds to minutes. . . . . | Aw (E) |
| Finds intervals in - days . . . . . | Ap |
| months . . . . | Ap |
| weeks. . . . . | Ap |
| years. . . . . | Ap |
| hours. . . . . | K |
| minutes. . . . | K |
| Reads and writes dates verbally and numerically . . . . . | Ap |
| Recognizes and uses terms - | |
| evening, afternoon. . . . . | M |
| morning, night. . . . . | M |
| A.M., P.M.. . . . . | Ap |
| dawn, dusk. . . . . | Aw |
| Tells time in following intervals orally, reading, pictorially: | |
| hour and half-hour. . . . . | R |
| five minute . . . . . | M |
| one minute. . . . . | Ap |
| Reads and writes notation for time. | Ap |
| Identifies and uses varying terms for equivalent times | |
| half-past . . . . . | Ap |
| quarter of, after . . . . . | Ap |
| of, after, before, past . . . . | Ap |
| Solves computational problems using time. . . . . | Ap |

| GRADE 4 MEASUREMENT | Level of Ach. |
|---|---|
| Develops concept of comparative linear measure. . . . . | Ap |
| Recognizes standard units of measurement | |
| metric | |
| centimeter (cm) . . . . | Ap |
| meter (m) . . . . . | Ap |
| kilometer (km). . . . . | Ap |
| English | |
| inch (in.). . . . . | Ap |
| foot (ft.). . . . . | Ap |
| yard (yd.). . . . . | Ap |
| mile (mi.). . . . . | Ap |
| Uses linear measurements | |
| Finds perimeter . . . . . | Ap (E) |
| Finds area. . . . . | Ap (E) |
| Uses length and width . . . | M |
| Works computational problems using linear measurements . . . . . | Ap |
| Develops concept of liquid measurement. . . . . | Ap |
| Recognizes standard units of measurement: | |
| metric | |
| liter (l) . . . . . | Ap |
| English | |
| cup (c.). . . . . | Ap |
| pint (pt.). . . . . | Ap |
| quart (qt.) . . . . . | Ap |
| gallon (gal.) . . . . . | Ap |
| Works computational problems using liquid measurement. . . . . | Ap |
| Develops concept of mass/weight | |
| Recognizes standard units of measurement . . . . . | Ap |
| metric | |
| kilogram (kg) . . . . . | Ap |
| English | |
| pounds (lb.). . . . . | Ap |
| ounces (oz.). . . . . | Ap |

| GRADE 4<br>MEASUREMENT (cont.) | Level of Ach. |
|---|---|
| Converts units of metric measure. . | Ap |
| Converts units of English measure . | Ap |
| Develops concept of temeprature . . | Ap |
| Recognizes the following symbols: | |
| degrees - $^{o}$ . . . . . | Ap |
| C . . . . . | Ap |
| F . . . . . | Ap |
| Recognizes standard units of measurement | |
| metric | |
| Celsius (C) . . . . . | Ap |
| English | |
| Fahrenheit (F). . . . . | Ap |
| Works computational problems using temperature . . . . . | Ap (E) |
| Develops concept of and uses estimation in all areas of measurement . | Ap |

GEOMETRY

| | |
|---|---|
| Identifies: | |
| circle. . . . . | M |
| square. . . . . | M |
| triangle. . . . . | M |
| rectangle . . . . . | M |
| Reproduces: | |
| circle. . . . . | M |
| square. . . . . | M |
| triangle. . . . . | M |
| rectangle . . . . . | M |
| Recognizes polygons: | |
| quadrilaterals. . . . . | Aw (E) |
| pentagon. . . . . | Aw (E) |
| hexagon . . . . . | Aw (E) |
| septagon. . . . . | Aw (E) |
| octagon . . . . . | Aw (E) |
| nonagon . . . . . | Aw (E) |
| decagon . . . . . | Aw (E) |

| GRADE 4<br>GEOMETRY (cont.) | Level of Ach. |
|---|---|
| Identifies figures: | |
| cylinder. . . . . | Ap |
| cone. . . . . | Ap |
| cube. . . . . | Ap |
| sphere. . . . . | Ap |
| Differentiates between open and closed figures . . . . . | Ap |
| Reproduces and draws open and closed figures . . . . . | Ap |
| Identifies points, lines, line segments, rays, angles . . . . . | Ap (E) |
| Reproduces and draws points, lines, line segments, rays, angles . . . . | Ap (E) |
| Recognizes, identifies, and uses terms: | |
| length. . . . . | Ap |
| width . . . . . | Ap |
| diameter. . . . . | Ap (E) |
| area. . . . . | Ap (E) |
| perimeter . . . . . | Ap (E) |
| Identifies points inside, on, and outside of closed figures . . . . . | Ap |
| Identifies various sizes of similar shapes. . . . . | M |
| Identifies straight and curved lines | M |
| Recognizes and identifies terms applicable to graphing: | |
| graphs. . . . . | K (E) |
| vertical. . . . . | K (E) |
| horizontal. . . . . | K (E) |
| Reads points on a graph . . . . . | K (E) |
| Connects points on a graph. . . . . | K (E) |
| Interprets graphs . . . . . | K (E) |

| GRADE 5<br>NUMERATION | Level of Ach. |
|---|---|
| Recognizes, identifies, and uses (aurally, orally, reading, writing) number groupings | |
| to one million. . . . . | M |
| beyond one million. . . . . | Ap |
| Converts verbal numbers to numerical form. . . . . | Ap |
| Converts numbers to verbal form . | Ap |
| Reads and uses number line - | |
| Intervals other than one. . . | Ap |
| Fractional parts. . . . . | Ap |
| Place Value | |
| Recognizes, identifies, and uses terms - | |
| up to million . . . . . | M |
| beyond a million. . . . . | K |
| Recognizes, identifies, and uses place value: | |
| up to million . . . . . | M |
| beyond a million. . . . . | K |
| Rewrites numbers using expanded notation form (up to and including 6 digits) . . . . . | M |
| Rounds off numbers to: | |
| nearest tens. . . . . | M |
| nearest hundreds. . . . . | M |
| nearest thousands . . . . . | Ap |
| nearest ten thousands . . . . | Ap |
| nearest hundred thousands . . | K |
| nearest millions. . . . . | K |
| Recognizes, verbalizes, reads, and writes ordinal numbers (first to thousandth) . . . . . | M |
| Recognizes odd and even numbers . | Ap |
| Distinguishes between amounts demonstrating greater than, less than, equal to, not equal to: | |
| Recognizes symbols ($>$, $<$, $=$, $\neq$) | M |
| Recognizes relative values of numbers. . . . . | M |

| GRADE 5<br>NUMERATION (cont.) | Level of Ach. |
|---|---|
| Reads and writes Roman numerals | |
| (I to XII). . . . . | R |
| (XIII to M) . . . . . | K (E) |
| Powers of 10 | |
| Recognizes the term "exponent". | Ap |
| Uses exponential notation | |
| Converts from exponential notation to number values . | Ap |
| Converts from number value to exponential notation . . | Aw (E) |
| Recognizes and understands meaning of prime numbers: | |
| up to 100 . . . . . | K |
| 100 to 500. . . . . | Aw (E) |
| Recognizes and understands meaning of composite numbers. . . . . | K |
| Recognizes other number bases . . . | Aw |

| ADDITION | |
|---|---|
| Recognizes the use of 0 (identity). | M |
| Recognizes the use of the commutative property . . . . . | M |
| Recognizes the use of the associative property . . . . . | M |
| Adds two to six digit whole numbers | R |
| using column addition . . . . . | R |
| using expanded notation . . . . | R |
| Solves reading problems with above skill . . . . . | R |
| Finds missing addends in two digit addition. . . . . | M |
| Solves reading problems with above skill . . . . . | M |

| GRADE 5<br>ADDITION (cont.) | Level of Ach. |
|---|---|
| Estimates sums. . . . . | Ap |
| Checks addition problems. . . . . | M |
| by adding in reverse. . . . . | M |
| by subtracting. . . . . | M |
| Groups by tens in column addition . | Ap |

| SUBTRACTION | |
|---|---|
| Recognizes and uses terms: | |
| subtrahend. . . . . | K |
| minuend . . . . . | K |
| difference. . . . . | K |
| Recognizes use of zero. . . . . | Ap |
| regrouping with one zero. . . . | Ap |
| regrouping with consecutive zeros . . . . . | Ap |
| Recognizes and uses subtraction facts . . . . . | R |
| Finds missing numbers in subtraction problems . . . . . | R |
| Solves reading problems with above skills. . . . . | R |
| Subtracts two to six digit whole numbers . . . . . | M |
| Uses expanded notation with two to six digit whole number subtraction. . . . . | M |
| Solves reading problems with above skills. . . . . | M |
| Checks subtraction problems - | |
| by using addition . . . . . | M |
| Estimates differences . . . . . | Ap |

| GRADE 5<br>MULTIPLICATION | Level of Ach. |
|---|---|
| Recognizes and uses terms:. . . . . | Ap |
| factors . . . . . | Ap |
| products. . . . . | Ap |
| Recognizes the property of 0. . . . | M |
| Recognizes the identity property of 1 . . . . . | M |
| Solves multiplication problems using times tables up to and including 10's. . . . . | Ap |
| Solves reading problems with above skill . . . . . | Ap |
| Multiplies two to five digit whole number by one digit whole number. . | Ap |
| Multiplies two to four digit whole number by two digit whole number. . | Ap |
| Multiplies three digit whole number by three digit whole number . . . . | Ap (E) |
| Recognizes the use of 0 in multiplication . . . . . | Ap |
| in factors. . . . . | Ap |
| in products . . . . . | Ap |
| Multiplies by multiples of 10 and multiples of 100. . . . . | Ap |
| Solves reading problems in all areas of multiplication . . . . | Ap |
| Recognizes the use of the commutative property . . . . . | Ap |
| Recognizes the use of the associative property . . . . . | Ap |
| Recognizes the use of the distributive property . . . . . | Ap |
| Checks multiplication problems by using division. . . . . | Ap |
| Estimates products. . . . . | Ap |

| GRADE 5<br>DIVISION | Level of Ach. |
|---|---|
| Recognizes and uses the terms: | |
| quotient. . . . . | Ap |
| divisor . . . . . | Ap |
| dividend. . . . . | Ap |
| remainder . . . . . | Ap |
| Divides with no remainders using - | |
| one and two digit whole number divisors into two to five digit whole numbers . . . . . | Ap |
| Divides with remainders using one and two digit whole number divisors. . | |
| into two to five digit whole numbers . . . . . | Ap |
| with remainders as whole numbers . . . . . | Ap |
| with remainders as fractional parts. . . . . | Ap |
| Checks division by using multiplication. . . . . | Ap |
| Recognizes the use of zero in division. . . . . | Ap |
| in divisors . . . . . | Ap |
| in dividends. . . . . | Ap |
| in quotients. . . . . | Ap |
| Solves reading problems in all areas of division . . . . . | Ap |
| Estimates quotients . . . . . | K (E) |
| Divides by multiples of ten . . . | Ap |

FRACTIONS

(When convenient, teachers are urged to use fractions which appear in practical use:
denominators 1 to 10
multiples of 4 and 10)

| GRADE 5<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Names fractional parts of wholes and sets. . . . . | M |
| orally<br>writing | |
| Names and identifies numerator and denominator . . . . . | M |
| Equates fractions to whole - 2/2=1, 3/3=1, etc. . . . . | M |
| Identifies equivalent fractions numerically . . . . . | Ap |
| Adds fractions of like denominators (sums up to one whole). . . . . | M |
| Subtracts fractions of like denominators (differences less than or equal to one) . . . . . | Ap |
| Solves word problems using addition and subtraction of like denominators . . . . . | Ap |
| Recognizes the following terms, concepts, and techniques: | |
| Proper/improper | |
| -adds and subtracts fractions of like denominators . . . . | Ap |
| Improper/mixed numbers | |
| -converts improper fractions to mixed numbers . . . . . | Ap |
| -adds and subtracts improper fractions of like denominators. . . . . | Ap |
| -converts mixed numbers to improper fractions . . . . . | Ap |
| Converts proper fractions into lowest terms . . . . . | Ap |
| Uses common denominator with two fractions | |
| Proper fractions | |
| Changes one denominator to other | |
| adds<br>subtracts | |

| GRADE 5<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| -mixed numbers (no regrouping) | |
| Changes one denominator to other. . . | Ap |
| adds<br>subtracts | |
| Changes both denominators to new common denominator. . . . . | Ap |
| adds<br>subtracts | |
| Least common denominator | |
| Finds the least common multiple involving the following: . | Ap |
| proper fractions . . . | Ap |
| adds<br>subtracts | |
| mixed numbers-without regrouping . . . . . | Ap |
| adds<br>subtracts | |
| Solves word problems using the above terms, concepts, and techniques. | |
| Recognizes zero value in fractions | Ap |
| Multiplies proper fractions and converts answer to lowest terms. . | Ap |
| Division of fractions | |
| Recognizes term-reciprocal . . | K |
| Divides proper fractions by proper fraction and converts to lowest terms. . . . . | Ap |
| Concept of decimals | |
| Recognizes the following terms: . . . . . | K |
| decimal point<br>tenths<br>hundredths | |

| GRADE 5<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Recognizes the place value-up to hundredths. . . . . | Ap |
| reading<br>writing | |
| Equates decimals to fractions (tenths, hundredths, halves, fourths). . . . . | Ap (E) |
| Equates fractions to decimals (tenths, hundredths, havles, fourths). . . . . | Ap (E) |
| Recognizes zero as a placeholder. . . . . | K |
| Adds and subtracts decimals up to hundredths. . . . . | Ap |
| Multiplies decimals by whole numbers . . . . . | Ap |

MONEY

| | |
|---|---|
| Associates values of money and equivalent values . . . . . | M |
| Combines money to values up to $10.00. . . . . | M |
| Makes change in amounts up to $10.00. . . . . | M |
| Solves two-step word problem involving combining money and making change (up to $100.00). . . . . | Ap |
| Recognizes and use terms and notations for ¢, $, and decimal point . | M |
| Translates ¢ to $ and $ to ¢ notation. . . . . | M |
| Adds money using ¢ notation . . . . | M |
| Adds money using $ notation . . . . | M |
| Subtracts money using ¢ notation. . | M |
| Subtracts money using $ notation. . | M |

| GRADE 5<br>MONEY (cont.) | Level of Ach. |
|---|---|
| Multiplies money using $ notation | |
| Two to three digits by one or two digits (ex. $.25 x 10 = $2.50) | Ap |
| Division of money using $ notation | |
| One digit divisors | Ap |

| GRADE 5<br>TIME (cont.) | Level of Ach. |
|---|---|
| Reads and writes notation for time. | Ap |
| Solves computational problems using time | Ap |
| Develops concept of standard and daylight savings time | Ap |

## TIME

| | | |
|---|---|---|
| Identifies- | | |
| Number of days in a week | R | |
| Number of months in a year | R | |
| Number of days in a year | M | |
| (leap year) | Aw | (E) |
| Number of hours in a day | Ap | |
| Number of minutes in an hour | Ap | |
| Number seconds in a minute | Ap | |
| Converts the following: | | |
| days to weeks | M | |
| months to years | M | |
| days to years | Ap | (E) |
| hours to days | Ap | |
| minutes to hours | Ap | |
| seconds to minutes | K | (E) |
| Reads a calendar | M | |
| Finds intervals in days | M | |
| weeks | Ap | |
| months | Ap | |
| years | M | |
| hours | Ap | |
| minutes | Ap | |
| Reads and writes dates verbally and numerically | | |
| Tells time in following intervals orally, reading, pictorially: | | |
| hour and half-hour | R | |
| five minute | M | |
| one minute | Ap | |

## MEASUREMENT

| | |
|---|---|
| Develops concept of metric prefixes | K |
| milli, centi, deci, base unit, deka, hecto, kilo | |
| Develops concept of comparative linear measurement | |
| Recognizes standard units of measurement | Ap |
| metric | |
| centimeter (cm) | Ap |
| meter (m) | Ap |
| kilometer (km) | Ap |
| English | |
| inch (in.) | Ap |
| foot (ft.) | Ap |
| yard (yd.) | Ap |
| mile (mi.) | Ap |
| Uses linear measuruments | |
| Finds perimeter | Ap |
| Finds area | Ap |
| Develops concept of square units | |
| Finds volume | K |
| Develops concept of cubic units | |
| Reads and uses a ruler using 1/4" intervals | Ap |
| Works computational problems using linear measure | Ap |
| Develops concept of liquid measurement | Ap |
| Recognizes standard units of measurement | Ap |

| GRADE 5<br>MEASUREMENT (cont.) | Level of Ach. |
|---|---|
| metric | |
| liter (l) | Ap |
| English | |
| cup (c.) | Ap |
| pint (pt.) | Ap |
| quart (qt.) | Ap |
| gallon (gal.) | Ap |
| Works computational problems using liquid measurement | Ap |
| Develops concept of mass/weight. | Ap |
| Recognizes standard units | |
| metric | |
| kilogram (kg) | Ap |
| English | |
| pounds (lb.) | Ap |
| ounces (oz.) | Ap |
| tons (T.) | Ap |
| Reads and uses a scale up to 1/2 lb. intervals | Ap |
| Works computational problems using mass/weight | Ap |
| Converts units of metric measure | Ap |
| Converts units of English measure. | Ap |
| Develops concept of temperature. | Ap |
| Recognizes the following symbols: | |
| degrees - $^{o}$ | Ap |
| C | Ap |
| F | Ap |
| Recognizes standard units of measurement: | |
| metric | |
| Celsius (C) | Ap |
| English | |
| Fahrenheit (F) | Ap |
| Reads and uses thermometer | |
| metric - Celsius | Ap |
| English - Fahrenheit | Ap |
| Works computational problems using temperature. | Ap |

| GRADE 5<br>MEASUREMENT (cont.) | Level of Ach. |
|---|---|
| Develops concept of and uses estimation in all areas of measurement. | Ap |

GEOMETRY

| | |
|---|---|
| Identifies and reproduces shapes - | |
| circle | R |
| square | R |
| triangle | R |
| equilateral triangle | K |
| rectangle | R |
| Recognizes polygons | |
| quadrilateral | Aw (E) |
| pentagon | Aw (E) |
| hexagon | Aw (E) |
| septagon | Aw (E) |
| octagon | Aw (E) |
| nonagon | Aw (E) |
| decagon | Aw (E) |
| Identifies figures | |
| cylinder | Ap |
| cone | Ap |
| cube | Ap |
| sphere | Ap |
| pyramid | Ap |
| Differentiate between open and closed figures | M |
| Reproduces and draws open and closed figures | M |
| Recognizes and identifies the following: | |
| points | M |
| lines | M |
| line segments | M |
| rays | M |
| angles | Ap |
| right angles | Ap |
| parallel lines | Ap |
| Reproduces and draws these figures: | |
| points | Ap |
| lines | Ap |
| line segments | Ap |
| rays | Ap |
| angles | Ap |
| right angles | Ap |
| parallel lines | Ap |

| GRADE 5<br>GEOMETRY (cont.) | Level of Ach. | GRADE 5<br>GEOMETRY (cont.) | Level of Ach. |
|---|---|---|---|
| Recognizes, identifies and uses the term "degree" and the degree symbol $^{o}$ . . . . . | K | | |
| Uses the protractor to measure and compare angles. . . . . | K | | |
| Uses a compass for - | | | |
| Reproducing angles. . . . . | K | | |
| Reproducing the segments. . . . | K | | |
| Drawing circles . . . . . | K | | |
| Recognizes, identifies and uses terms: | | | |
| Length. . . . . | Ap | | |
| Width . . . . . | Ap | | |
| Diameter. . . . . | Ap | | |
| Area. . . . . | Ap | | |
| Perimeter . . . . . | Ap (E) | | |
| Radius. . . . . | Ap (E) | | |
| Height. . . . . | Ap (E) | | |
| Volume. . . . . | Ap (E) | | |
| Identifies points inside, on and outside of closed figures . . . . . | M | | |
| Recognizes and identifies terms applicable to graphing: | | | |
| Graph . . . . . | Ap | | |
| Vertical. . . . . | Ap | | |
| Horizontal. . . . . | Ap | | |
| Reads points on a graph . . . . . | K (E) | | |
| Connects points on a graph. . . . . | K (E) | | |
| Interprets graph. . . . . | K (E) | | |
| Reads graphs | | | |
| Picture graphs. . . . . | K (E) | | |
| Bar graphs. . . . . | K (E) | | |
| Line graphs . . . . . | K (E) | | |
| Circle graphs . . . . . | K (E) | | |

| GRADE 6<br>NUMERATION | Level of Ach. |
|---|---|
| Recognizes, identifies, and uses (aurally, orally, reading, writing) number groupings. . . . . | M |
| Converts verbal numbers to numerical form. . . . . | M |
| Converts numbers to verbal form . . | M |
| Reads and uses number line | |
| Intervals other than one. . . . | M |
| Fractional parts. . . . . | M |
| Place Value | |
| Recognizes, identifies, and uses terms: | |
| up to million. . . . . | M |
| beyond a million . . . . . | Ap (E) |
| Rewrites numbers using expanded notation form (up to and including 6 digits) . . . . . | M |
| Rounds off numbers to: | |
| nearest tenths. . . . . | Ap |
| nearest hundredths. . . . . | Ap |
| tens. . . . . | M |
| hundreds. . . . . | M |
| thousands . . . . . | M |
| ten thousands . . . . . | M |
| hundred thousands . . . . . | Ap |
| millions. . . . . | Ap |
| Recognizes, verbalizes, reads and writes ordinal numbers (first to thousandth) . . . . . | R |
| Recognizes odd and even numbers . . | M |
| Distinguishes between amounts demonstrating greater than, less than, equal to and not equal to: | |
| Recognizes symbols ($>$, $<$, $=$, $\neq$) | R |
| Recognizes relative values of numbers . . . . . | R |
| Reads and writes Roman numerals | |
| (I to XII). . . . . | R |
| (XIII to M) . . . . . | Ap (E) |

| GRADE 6<br>NUMERATION (cont.) | Level of Ach. |
|---|---|
| Powers of 10 | |
| Recognizes the term "exponent". . . | M |
| Uses exponential notation: | |
| Converts from exponential notation to number value. . . . . | Ap |
| Converts from number value to exponential notation. . . . . | Ap |
| Recognizes and understnads the meaning of prime numbers | |
| up to 100. . . . . | Ap |
| 100 to 500 . . . . . | K (E) |
| Recognizes and understands the meaning of composite numbers. . . . . | Ap |
| Finds prime factors of a number . . | Ap |
| Finds greatest common factor (GCF) of 2 numbers. . . . . | Ap |
| Finds least common multiple (LCM) of 2 numbers. . . . . | Ap |
| Recognizes other number bases | |
| Base 5. . . . . | Aw (E) |
| Base 2. . . . . | Aw (E) |

| ADDITION | |
|---|---|
| Recognizes the use of 0 (identity). | R |
| Recognizes the use of the commutative property . . . . . | R |
| Recognizes the use of the associative property . . . . . | R |
| Adds two to six digit whole numbers | R |
| Using column addition . . . . . | R |
| Using expanded notation . . . . | R |
| Solves reading problems with above skill . . . . . | R |

| GRADE 6<br>ADDITION (cont.) | Level of Ach. |
|---|---|
| Finds missing addends in two digit addition. . . . . | R |
| Solves reading problems using above skill . . . . . | M |
| Estimates sums. . . . . | M |
| Checks addition problems. . . . . | R |
| by adding in reverse . . . . | R |
| by subtracting . . . . . | R |
| Groups by tens in column addition | M |

SUBTRACTION

| | |
|---|---|
| Recognizes and uses terms: | |
| subtrahend. . . . . | M |
| minuend . . . . . | M |
| difference. . . . . | M |
| Recognizes use of zero | |
| regrouping with one zero. . . | M |
| regrouping with consecutive zeros . . . . . | M |
| Recognizes and uses subtraction facts . . . . . | R |
| Finds missing numbers in subtraction problems. . . . . | R |
| Solves reading problems with above skills. . . . . | M |
| Subtracts two to six digit whole numbers . . . . . | R |
| Uses expanded notation with two to six digit subtraction. . . | R |
| Solves reading problems with above skills. . . . . | M |
| Checks subtraction problems . . . | M |
| by using addition | |
| Estimates differences . . . . . | Ap (E) |

| GRADE 6<br>MULTIPLICATION | Level of Ach. |
|---|---|
| Recognizes and uses terms:. . . . . | M |
| factors . . . . . | M |
| products. . . . . | M |
| Recognizes the property of 0. . . . | R |
| Recognizes the identity of 1. . . . | R |
| Solves multiplication problems using times tables up to and including 10's. . . . . | M |
| Solves reading problems with above skill . . . . . | Ap |
| Multiplies two to five digit whole numbers by one digit whole number . | M |
| Multiplies two to four digit whole numbers by two digit whole number . | M |
| Multiplies three digit whole numbers by three digit whole number. . | Ap |
| Recognizes the use of 0 in multiplication in factors . . . . . | M |
| in products. . . . . | M |
| Multiplies by multiples of 10, 100, 1000. . . . . | M |
| Solves reading problems in all area of multiplication . . . . . | Ap |
| Recognizes the use of the commutative property. . . . . | M |
| Recognizes the use of the associative property. . . . . | M |
| Recognizes the use of the distributive property . . . . . | Ap |
| Checks multiplication problems. . . | M |
| by using division . . . . . | M |
| Estimates products. . . . . | Ap (E) |

| GRADE 6<br>DIVISION | Level of Ach. |
|---|---|
| Recognizes and uses the terms: | |
| quotient | M |
| divisor | M |
| dividend | M |
| remainder | M |
| Divides with no remainders: | |
| Using one and two digit whole number divisors into two to five digit whole numbers | M |
| Using one digit whole number divisors into two to four digit whole numbers using short division | Ap |
| Divides with remainders: | |
| Using one and two digit whole number divisors into two to five digit whole numbers | Ap |
| with remainders as whole numbers | Ap |
| with remainders as fractional parts | Ap |
| Divides with remainders using three digit whole number divisors | |
| into three to five digit whole numbers | Ap |
| with remainders as whole numbers | Ap |
| with remainders as fractional parts | Ap |
| Checks division by using multiplication | M |
| Recognizes the use of zero in division | Ap |
| in divisors | Ap |
| in dividends | Ap |
| in quotients | Ap |
| Solves reading problems in all areas of division | Ap |
| Estimates quotients | Ap (E) |
| Divides by multiples of 10 and 100. | Ap |

| GRADE 6<br>DIVISION (cont.) | Level of Ach. |
|---|---|
| Recognizes and uses divisibility rules for 2 and 5 | Ap (E) |
| Solves reading problems including all operations using more than one computation | Ap |

## FRACTIONS

| | |
|---|---|
| (When convenient, teachers are urged to use fractions which appear in practical use:<br>denominators 1 to 10<br>multiples of 4 and 10 | |
| Names fractional parts of whole and sets | M |
| orally<br>writing | |
| Names and identifies the following terms: | |
| numerator | M |
| denominator | M |
| proper/improper | Ap |
| mixed numbers | Ap |
| common denominator | Ap |
| least common multiple/least common denominator | Ap |
| Equates fractions to whole 2/2=1, 3/3=1, etc. | M |
| Identifies equivalent fractions numerically | Ap |
| Compares values of fractions | K |
| Adds fractions of like denominators (sums up to one whole) | M |
| Subtracts fractions of like denominators (differences less than or equal to one) | M |
| Solves word problems using addition and subtraction of like denominators | Ap |
| Recognizes the following terms, concepts, and techniques: | |

| GRADE 6<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Proper/improper | |
| -Adds and subtracts fractions of like denominators. . . . . | M |
| Improper/mixed numbers | |
| -Converts improper fractions to mixed numbers. . . . . | Ap |
| -Adds and subtracts improper fractions of like denominators . . | Ap |
| -Converts answers to mixed numbers. . . . . | Ap |
| -Converts mixed numbers to improper fractions . . . . . | Ap |
| Converts property into lowest terms | Ap |
| Uses property of 1 to reduce fractions to lowest terms. . . . . | Ap |
| Uses common denominator with two fractions | |
| -Proper fractions | |
| Changes one denominator to other. . . . . | Ap |
| adds<br>subtracts | |
| Changes both denomonators to new common denominators | Ap |
| adds<br>subtracts | |
| -Mixed numbers (no regrouping) | |
| Changes one denominator to other. . . . . | Ap |
| adds<br>subtracts | |
| Changes both denominators to new common denominator. | Ap |
| adds<br>subtracts | |
| -Mixed numbers (regrouping) using common denominators | |
| Adds mixed numbers and regroups answer. . . . . | Ap |
| ex. 1 4/5<br>+ 2 3/5<br>3 7/5 = 4 2/5 | |

| GRADE 6<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Subtracts mixed numbers using regrouping. . . . . | Ap |
| ex. 3 2/5 = 2 7/5<br>- 2 4/5 = 2 4/5<br>3/5 | |
| Least common denominator | |
| -Finds the least common multiple involving the following: . . . . . | Ap |
| Proper fractions. . . . . | Ap |
| adds<br>subtracts | |
| Mixed numbers-without regrouping. . . . . | Ap |
| adds<br>subtracts | |
| Mixed numbers-with regrouping . . . . . | Ap |
| Adds | |
| Whole numbers and proper fractions. . . | Ap |
| Whole numbers and mixed numbers . . . . | Ap |
| Mixed numbers and mixed numbers . . . . | Ap |
| Subtracts | |
| Whole numbers minus proper fraction . . . | Ap |
| Mixed number minus whole number. . . . . | Ap |
| Solves word problems using the above terms, concepts, and techniques . . . . . | Ap |
| Recognizes zero value in fractions. | Ap |
| Multiplies the following types of fractions and converts answers to lowest terms: | |
| Proper fraction times proper fraction. . . . . | Ap |
| Whole number times proper fraction. . . . . | Ap |

| GRADE 6<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Whole number times mixed number. . . . . | Ap |
| Mixed number times proper fraction. . . . . | Ap |
| Mixed number times mixed number. . . . . | Ap |
| Divides the following types of fractions and converts answer to lowest terms: | |
| (Recognizes term-"reciprocal") | K |
| Proper fraction by proper fraction. . . . . | Ap |
| Whole number by proper fraction | Ap |
| Proper fraction by whole number. . . . . | Ap |
| Mixed number by whole number. . . . . | Ap |
| Whole number by mixed numbers . . . . . | Ap |
| Mixed number by proper fraction. . . . . | Ap |
| Proper fraction by mixed number. . . . . | Ap |
| Mixed number by mixed number. . . . . | Ap |
| Solves word problems using multiplication and division. . . . . | Ap |
| Concept of decimals | |
| Recognizes the following terms: | Ap |
| decimal point<br>tenths<br>hundredths<br>thousandths | |
| Recognizes place value | |
| up to thousandth. . . . . | Ap |
| reading<br>writing | |
| beyond thousandth . . . . | K (E) |
| reading<br>writing | |

| GRADE 6<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Equates decimals to fractions (tenths, hundredths, thousandths, halves, fourths). . . . . | Ap |
| Equates fractions to decimals (tenths, hundredths, thousandths, halves, fourths). . . . . | Ap |
| Recognizes zero as a place holder | K |
| Adds and subtracts decimals up to thousandths . . . . . | Ap |
| Multiplies decimals | |
| Decimal by whole number . . . | Ap |
| Decimal by decimal (up to hundredth). . . . . | Ap |
| Divides decimals | |
| Rounds off answers. . . . . | Ap |
| Decimal by whole number (up to two digits) . . . . . | Ap |
| Decimal by decimal (divisor only tenths). . . . . | Ap |
| Concept of percent | |
| Recognizes the following symbols:. . . . . | Ap |
| percent<br>percentage<br>% | |
| Converts decimals to percents | Ap |
| Converts percents to decimals | Ap |
| Equates fractions to percents (halves, fourths, tenths, hundredths) . . . . . | Ap |

| GRADE 6<br>MONEY | Level of Ach. |
|---|---|
| Associates values of money and equates values. . . . . | R |
| Combines money to values up to $10.00. . . . . | M |
| Makes change up to $10.00 . . . . . | M |
| Solves two-step word problems involving combining money and making change (up to $100). . . . . | Ap |
| Recognizes and uses terms for ¢, $, and decimal point . . . . . | R |
| Translates ¢ to $ and $ to ¢ notation. . . . . | R |
| Adds money using ¢ or $ notation. . | R |
| Subtracts money using ¢ or $ notation. . . . . | R |
| Multiplies money using $ notation | |
| Two or three digits by one or two digits. . . . . | M |
| Divides money using $ notation | |
| One digit divisors. . . . . | Ap |
| Two digit divisors. . . . . | Ap (E) |

| GRADE 6<br>TIME (cont.) | Level of Ach. |
|---|---|
| Converts the following: | |
| days to weeks. . . . . | M |
| months to years. . . . . | M |
| days to years. . . . . | M (E) |
| hours to days. . . . . | M |
| minutes to hours . . . . . | M |
| seconds to minutes . . . . . | M (E) |
| Finds intervals in: | |
| days. . . . . | R |
| weeks . . . . . | M |
| months. . . . . | M |
| years . . . . . | R |
| hours . . . . . | M |
| minutes . . . . | M |
| Reads and writes dates verbally and numerically. . . . . | R |
| Tells time in following intervals orally, reading, pictorially: | |
| hour, half-hour, five minute . | R |
| one minute . . . . . | M |
| Reads and writes notation for time | M |
| Solves computational problems using time . . . . . | M |
| Develops concept of standard and daylight savings time . . . . . | Ap |

TIME

| | |
|---|---|
| Identifies: | |
| number of days in a week. . . . | R |
| number of months in a year. . . | R |
| number of days in a year. . . . | R |
| (leap year) . . . . . | Ap |
| number of hours in a day. . . . | M |
| number of minutes in an hour. . | M |
| number of seconds in a minute . | M |
| Reads a calendar. . . . . | R |

MEASUREMENT

| | |
|---|---|
| Recognizes metric prefixes | |
| milli, centi, deci, base unit, deka, hecto, kilo. . . . . | Ap |
| Uses symbols for feet (') and inches (") . . . . . | Ap |
| Develops concept of comparative linear measurement | |
| Recognizes standard units of measurement. . . . . | M |

| GRADE 6<br>MEASUREMENT (cont.) | Level of Ach. |
|---|---|
| metric | |
| centimeter (cm) | M |
| meter (m) | M |
| kilometer (km) | M |
| English | |
| inch (in.) | M |
| foot (ft.) | M |
| yard (yd.) | M |
| mile (mi.) | M |
| Uses linear measurement | |
| Finds perimeter | M |
| Finds area (concept of square units) | Ap |
| Finds volume (concept of cubic units) | Ap |
| Reads and uses a ruler to 1/8" intervals | Ap |
| Reads and uses a meter stick | Ap |
| Works computational problems using linear measurement | Ap |
| Develops concept of liquid measurement: | |
| Recognizes standard units | M |
| metric | |
| liter (l) | M |
| English | |
| cup (c.) | M |
| pint (pt.) | M |
| quart (qt.) | M |
| gallon (gal.) | M |
| Works computational problems using liquid measurement | Ap |
| Develops concept of mass/weight | |
| Recognizes standard unit | M |
| metric | |
| kilogram (kg) | M |

| GRADE 6<br>MEASUREMENT (cont.) | Level of Ach. |
|---|---|
| English | |
| pounds (lb.) | M |
| ounces (oz.) | M |
| tons (T.) | Ap |
| Reads and uses a scale up to 1/4 lb. intervals | Ap |
| Works computational problems using mass/weight | Ap |
| Converts units of metric measure | Ap |
| Converts units of English measure | Ap |
| Develops concept of temperature | M |
| Recognizes the following symbols: | |
| degrees - $^{o}$ | M |
| C | M |
| F | M |
| Recognizes standard units of measure | |
| metric | |
| Celsius | M |
| English | |
| Fahrenheit | M |
| Reads and uses a thermometer | Ap |
| Works computational problems using temperature | Ap (E) |
| Develops concept of and uses estimation in all areas of measurement. | Ap (E) |

GEOMETRY

| | |
|---|---|
| Identifies and reproduces shapes: | |
| circle | R |
| square | R |
| triangle | R |
| right triangle | Ap |
| equilateral triangle | Ap |
| rectangle | R |

| GRADE 6<br>GEOMETRY (cont.) | Level of Ach. |
|---|---|
| Recognizes polygons: | |
| quadrilateral | M |
| trapezoid | K |
| parallelogram | K |
| rectangle | R |
| rhombus | K |
| square | R |
| pentagon | Aw (E) |
| hexagon | Aw (E) |
| septagon/hectagon | Aw (E) |
| octagon | Aw (E) |
| nonagon | Aw (E) |
| decagon | Aw (E) |
| Identifies figures: | |
| cyclinder | M |
| cone | M |
| cube | M |
| sphere | M |
| pyramid | M |
| Differentiates between open and closed figures | R |
| Reproduces and draws open and closed figures | R |
| Recognizes and identifies the following: | |
| points | R |
| lines | R |
| line segments | R |
| rays | R |
| angles-right, obtuse, acute | Ap |
| parallel lines | Ap |
| intersecting lines | Ap |
| perpendicular lines | Ap |
| Recognizes, identifies, and uses the term "degrees" and the degree symbol | Ap |
| Uses the protractor to measure and compare angles | Ap |
| Uses the compass for: | |
| Reproducing angles | Ap |
| Reproducing line segments | Ap |
| Drawing circles | Ap |
| Recognizes, identifies, and uses the following terms and symbols: | |
| length (l.) | Ap |
| width (w.) | Ap |
| diameter (d.) | Ap |
| area (A) | Ap |
| perimeter (p.) | Ap |
| radius (r.) | Ap |
| height (h.) | Ap |
| volume (V) | Ap |
| circumference (c.) | K |
| Identifies points inside, on, and outside of closed figures | R |
| Reads points on a graph | Ap |
| Connects points on a graph | Ap |
| Interprets graphs | Ap |
| Reads graphs: | |
| picture graphs | Ap |
| bar graphs | Ap |
| line graphs | Ap |
| circle graphs | Ap |
| Reproduces simple bar and line graphs | Ap |
| Reads tables | Ap |

| GRADE 7<br>NUMERATION | Level of Ach. | |
|---|---|---|
| Reads and writes numbers. . . . . | R | |
| Converts verbal numbers to numerical form. . . . . | R | |
| Converts numbers to verbal form . | R | |
| Reads and uses number line | | |
| Intervals other than one. . . | R | |
| Fractional parts. . . . . | R | |
| Place Value | | |
| Recognizes, identifies, and uses terms: | | |
| up to million . . . . . | R | |
| beyond a million. . . . . | M | (E) |
| Recognizes, identifies, and uses place value: | | |
| up to million . . . . . | R | |
| beyond a million. . . . . | M | (E) |
| Rewrites numbers using expanded notation form (up to and including 6 digits) . . . . . | R | |
| Rounds off numbers to: | | |
| nearest ten thousand. . . . . | Ap | |
| nearest thousandth. . . . . | Ap | |
| nearest hundredth . . . . . | M | |
| nearest tenth . . . . . | M | |
| nearest tens. . . . . | R | |
| nearest hundreds. . . . . | R | |
| nearest thousands . . . . . | R | |
| nearest ten thousands . . . . | R | (E) |
| nearest hundred thousands . . | M | (E) |
| nearest millions. . . . . | M | (E) |
| Recognizes odd and even numbers . | R | |
| Distinguishes between amounts demonstrating greater than, less than, equal to, and not equal to | | |
| Recognizes symbols (>, <, =, ≠) | R | |
| Recognizes relative values of numbers . . . . . | R | |
| Powers of 10 | | |
| Recognizes the term "exponent". . | M | |

| GRADE 7<br>NUMERATION (cont.) | Level of Ach. | |
|---|---|---|
| Uses exponential notation: | | |
| Converts from exponential notation to number value. . . . . | M | |
| Converts from number value to exponential notation. . . . . | M | |
| Exponents | | |
| Uses exponential notation for numbers other than ten raised to first to fifth powers. . . . . | Ap | |
| Converts from exponential notation to expanded form and number value . | Ap | |
| Converts from expanded form and number value to exponential notation. . . . . | Ap | |
| Recognizes and understands the meaning of prime numbers: | | |
| up to 100 . . . . . | Ap | |
| 100 to 500. . . . . | K | (E) |
| Recognizes and understands the meaning of composite numbers. . . . . | Ap | |
| Finds prime factors of a number . . | Ap | |
| Finds greatest common factor (GCF) of numbers. . . . . | Ap | |
| Finds least common multiple (L.C.M.) of numbers. . . . . | Ap | |
| BASIC OPERATIONS<br>(addition, subtraction, multiplication, division) | | |
| Recognizes and uses proper order of operations. . . . . | Ap | |
| multiplication. . . . . | Ap | |
| division. . . . . | Ap | |
| addition. . . . . | Ap | |
| subtraction . . . . . | Ap | |

| GRADE 7<br>BASIC OPERATIONS (cont.) | Level of Ach. |
|---|---|
| Recognizes and uses terms. . . . | Ap |
| variable . . . . . | Ap |
| equation . . . . . | Ap |
| constant . . . . . | Ap |
| Recognizes use of 0 in the basic operations . . . . . | M |
| Recognizes use of commutative property in addition . . . . . | R |
| Recognizes use of associative property in addition . . . . . | R |
| Recognizes use of commutative property in multiplication . . . | R |
| Recognizes use of associative property in multiplication . . . | R |
| Recognizes use of distributive property . . . . . | M |
| Adds two to six digit whole numbers. . . . . | R |
| Checks addition of two to six digit whole numbers. . . . . | R |
| Estimates sums of two to six digit whole numbers. . . . . | M |
| Groups by 10's in two to six digit whole number column addition | R |
| Subtracts two to six digit whole numbers. . . . . | R |
| Recognizes and uses terms. . . . | R |
| subtrahend . . . . . | R |
| minuend. . . . . | R |
| difference . . . . . | R |
| Regroups with zero in two to six digit whole number subtraction . . . . . | R |
| Checks subtraction of two to six digit whole numbers. . . . . | R |
| Estimates differences of two to six digit whole number. . . . | Ap (E) |
| Multiplies whole numbers . . . . | M |
| Recognizes and uses the terms: . | R |
| factors. . . . . | R |
| products . . . . . | R |

| GRADE 7<br>BASIC OPERATIONS (cont.) | Level of Ach. |
|---|---|
| Recognizes the identity property of 1. . . . . | R |
| Uses multiplication tables up to 10's . . . . . | R |
| Multiplies up to four digit whole numbers by three digit whole numbers . . . . . | M |
| Recognizes use of zero in multiplication. . . . . | M |
| Multiplies by 10's, 100's, 1000's. . . . . | R |
| Checks multiplication . . . . . | R |
| Estimates products. . . . . | Ap (E) |
| Divides whole numbers . . . . . | R |
| Recognizes and uses terms | |
| quotient. . . . . | R |
| divisor . . . . . | R |
| dividend. . . . . | R |
| remainder . . . . . | R |
| Uses short division with one digit whole number divisors . . . . . | Ap |
| Divides using two to three digit whole number divisors . . . . . | Ap |
| Divides with remainders . . . . . | Ap |
| as whole numbers. . . . . | Ap |
| as fractional parts . . . . . | Ap |
| Checks division . . . . . | R |
| Recognizes the use of zeros in division. . . . . | M |
| Estimates quotients . . . . . | Ap (E) |
| Divides by 10's, 100's, 1000's. . . | M |
| Recognizes and uses divisibility rules for 2, 3, 5, 9. . . . . | Ap |
| Solves reading problems using all operations with one or more computations . . . . . | Ap |
| Solves simple algebraic equations using addition, subtraction, multiplication, or division. . . . . | Ap |

| GRADE 7<br>FRACTIONS | Level of Ach. |
|---|---|
| (When convenient, teachers are urged to use fractions which appear in practical use:<br>denominators 1 to 10<br>multiples of 4 and 10.) | |
| Names fractional parts of whole. . | M |
| orally<br>writing | |
| Names and identifies the following terms: | |
| numerator. . . . . | M |
| denominator. . . . . | M |
| proper/improper. . . . . | M |
| mixed numbers. . . . . | M |
| common denominator . . . . . | Ap |
| least common multiple/least common denominator . . . . . | Ap |
| Identifies equivalent fractions numerically. . . . . | Ap |
| Converts mixed numbers to improper fractions. . . . . | M |
| Converts improper fractions to mixed numbers. . . . . | M |
| Converts fractions to lowest terms | M |
| Compares values of fractions . . . | M |
| Finds least common denominator (LCM) | M |
| Adds the following types of fractions: | |
| Proper fractions | |
| like denominators. . . . . | M |
| unlike denominators. . . . | Ap |
| Proper fraction and whole number. . . . . | M |
| Proper fraction and mixed number | |
| like denominators. . . . . | M |
| unlike denominators. . . . | Ap |
| Mixed and whole numbers. . . . | M |
| Mixed numbers | |
| like denominators. . . . . | M |
| unlike denominators. . . . | Ap |

| GRADE 7<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Subtracts the following types of fractions: | |
| Proper fraction minus proper fraction | |
| like denominators. . . . . | M |
| unlike denominators. . . . | Ap |
| Whole number minus proper fraction . . . . . | M |
| Mixed number minus whole number | M |
| Whole number minus mixed number | M |
| Mixed number minus mixed number | M |
| like denominators. . . . . | M |
| unlike denominators. . . . | Ap |
| Multiplies the following types of fractions: | |
| Proper fraction times proper fraction . . . . . | M |
| Whole number times proper fraction . . . . . | M |
| Whole number times mixed number | M |
| Mixed number times proper fraction . . . . . | M |
| Mixed number times mixed number | Ap |
| Divides the following types of fractions: | |
| Recognizes the term-reciprocal | Ap |
| Proper fraction divided by proper fraction. . . . . | M |
| Whole number divided by proper fraction . . . . . | M |
| Proper fraction divided by whole number . . . . . | M |
| Mixed number divided by whole number . . . . . | M |
| Whole number divided by mixed number . . . . . | M |
| Mixed number divided by proper fraction . . . . . | M |
| Proper fraction divided by mixed number . . . . . | M |
| Mixed number divided by mixed number . . . . . | M |

| GRADE 7<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Solves word problems in all areas of fractions. . . . . | Ap |
| Recognizes zero value in fractions | Ap |
| Recognizes ratio and proportion . | K |
| Concept of decimals | |
| Recognizes the following terms: | |
| decimal point . . . . . | M |
| tenths. . . . . | M |
| hundredths. . . . . | M |
| thousandths . . . . . | M |
| ten thousandths . . . . . | Ap (E) |
| hundred-thousandths . . . | Ap (E) |
| millionths. . . . . | Ap (E) |
| Recognizes place value | |
| up to thousandth. . . . . | M |
| reading<br>writing | |
| beyond thousandth . . . . | Ap (E) |
| reading<br>writing | |
| Equates decimals to fractions | Ap |
| Equates fractions to decimals | Ap |
| Uses zero as a place holder . | Ap |
| Adds and subtracts decimals . | R |
| Multiplies decimals . . . . . | Ap |
| Divides decimals and rounds off answer. . . . . | Ap |
| decimal by whole number. | M |
| decimal by decimal . . . | Ap |
| whole number by decimal. | Ap |
| Solves reading problems using decimals. . . . . | Ap |
| Concept of percent | |
| Recognizes the following terms and symbols:. . . . . | K |
| percent<br>percentage (P)<br>% | |

| GRADE 7<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| rate (R)<br>base (B) | |
| Converts decimals to percents. | Ap |
| Converts percents to decimals. | Ap |
| Converts fraction to decimal to percent . . . . . | Ap |
| Converts percent to decimal to fraction . . . . . | Ap |
| Recognizes formula for finding percentage . . . . . | K |
| R x B = P | |
| Rate (percent) times base equals percentage | |
| finds percentage . . . . . | Ap |
| finds percent (rate) . . . | Ap |
| finds base . . . . . | Ap |
| Uses proportions in percentage | Ap |
| Solves word problems . . . . . | Ap |

MONEY

| | |
|---|---|
| Combines money and makes change | |
| up to $10.00 . . . . . | M |
| unlimited. . . . . | Ap (E) |
| Solves two-step word problems involving combining money and making change . . . . . | Ap |
| Adds and subtracts money . . . . . | R |
| Multiplies money . . . . . | R |
| Divides money. . . . . | M |

| GRADE 7<br>MONEY (cont.) | Level of Ach. | |
|---|---|---|
| Application of money | | |
| Finding interest | | |
| Recognizes and uses terms-principle (P), rate (R), time (T), interest (I). . . . | Ap | |
| Recognizes and uses formula-I = P x R x T | | |
| Sales problems | | |
| Recognizes and uses terms-regular price, discount, rate or discount, sales price. . . | Ap | |
| Computes discounts. . . . . | K | |
| Computes sale price . . . . . | K | |
| Marketing problem | | |
| Recognizes and uses terms-rate of mark up, selling price, cost . . . . . | Ap | (E) |
| Computes mark up and selling price . . . . . | K | (E) |
| Finding commission | | |
| Recognizes and uses terms-selling price, rate of commission, net proceeds. . . . . | K | (E) |
| Computes commission and net proceeds. . . . . | K | (E) |

| GRADE 7<br>TIME (cont.) | Level of Ach. | |
|---|---|---|
| Solves computational problems using time. . . . . | Ap | |
| Converts the following: | | |
| days to weeks . . . . . | M | |
| months to years . . . . . | M | |
| days to years . . . . . | M | (E) |
| hours to days . . . . . | M | |
| minutes to hours. . . . . | M | |
| seconds to minutes. . . . . | M | (E) |

TIME

| | | |
|---|---|---|
| Reads a calendar. . . . . | R | |
| Finds intervals in days . . . . . | R | |
| weeks. . . . . | M | |
| months . . . . | R | |
| years. . . . . | R | |
| hours. . . . . | R | |
| minutes. . . . | M | |

MEASUREMENT

| | | |
|---|---|---|
| Recognizes metric prefixes | | |
| milli, centi, deci, base unit, deka, hecto, kilo . . . . . | M | |
| Uses symbols for feet (') and inches ("). . . . . | M | |
| Develops concept of comparative linear measurement. . . . . | R | |
| Uses metric and English systems | R | |
| Works conversion problems within each system . . . . . | Ap | |
| Finds perimeter. . . . . | R | |
| Finds area (concept of square units). . . . . | M | |
| Finds volume (concept of cubic units) . . . . . | M | |
| Reads and uses a ruler of 1/16" intervals. . . . . | Ap | |
| Reads and uses a meter stick. . . . . | Ap | |
| Works computational problems using linear measurement. . . . | Ap | |
| Develops concept of liquid measurement. . . . . | R | |
| Uses metric and English systems . . . . . | M | |

| GRADE 7<br>MEASUREMENT (cont.) | Level of Ach. |
|---|---|
| Works conversion problems within each system. . . . . | Ap |
| Works computational problems using liquid measurement. . . | Ap |
| Develops concept of mass/weight . | R |
| Uses metric and English systems . . . . . | M |
| Works conversion problems within each systme. . . . . | M |
| Reads and uses a scale up to 1/4 lb. intervals . . . . . | Ap |
| Works computational problems using mass/weight . . . . . | Ap |
| Develops concept of temperature . | R |
| Uses metric and English systems . . . . . | R |
| Reads and uses a thermometer. | M |
| Converts C to F . . . . . | Ap (E) |
| Converts F to C . . . . . | Ap (E) |
| Works computational problems using temperature . . . . . | Ap (E) |
| Develops concept and uses estimation in all areas of measurement . . . | Ap (E) |

GEOMETRY

Identifies and reproduces polygons:

Triangles

| | |
|---|---|
| right . . . . . | Ap |
| equilateral . . . . . | Ap |
| isosceles . . . . . | Ap |
| obtuse. . . . . | Ap |
| acute . . . . . | Ap |
| scalene . . . . . | Ap |

| GRADE 7<br>GEOMETRY (cont.) | Level of Ach. |
|---|---|
| Quadrilaterals | |
| rectangle. . . . . | M |
| parallelogram. . . . . | Ap |
| trapezoid. . . . . | Ap |
| rhombus. . . . . | Ap |
| square . . . . . | M |
| Identifies: | |
| pentagon . . . . . | Ap (E) |
| hexagon. . . . . | Ap (E) |
| septagon . . . . . | Ap (E) |
| octagon. . . . . | Ap (E) |
| nonagon. . . . . | Ap (E) |
| decagon. . . . . | Ap (E) |
| Identifies geometric solids: | |
| cylinder . . . . . | R |
| cone . . . . . | R |
| cube . . . . . | R |
| sphere . . . . . | R |
| pyramid. . . . . | R |
| rectangular solid. . . . . | K |
| Identifies and reproduces the following: | |
| points . . . . . | R |
| lines. . . . . | R |
| line segments. . . . . | R |
| rays . . . . . | R |
| angles . . . . . | Ap |
| right angles . . . . . | K |
| obtuse angles. . . . . | K |
| acute angles . . . . . | K |
| straight angles. . . . . | K |
| reflex angles. . . . . | K (E) |
| complimentary angles . . . . . | K (E) |
| supplementary angles . . . . . | K (E) |
| vertical angles. . . . . | K (E) |
| Perpendicular lines. . . . . | K |
| Parallel lines . . . . . | K |
| Corresponding angles . . . . . | K |
| alternate interior angle . . . | K (E) |
| alternate exterior angle . . . | K (E) |
| Uses the protractor to measure and compare angles . . . . . | K |
| Uses the compass for- | |
| Reproducing angles . . . . . | Ap |
| Reproducing line segments. . . | Ap |
| Drawing circles. . . . . | Ap |
| Constructing perpendicular lines. . . . . | Ap |
| Bisecting line segments. . . . | Ap |

| GRADE 7<br>GEOMETRY (cont.) | Level of Ach. |
|---|---|
| Recognizes, identifies, and uses the following terms and their symbols: | |
| Length (l) | M |
| Width (w) | M |
| Diameter (d) | M |
| Area (A) | M |
| Perimeter (p) | M |
| Radius (r) | M |
| Height (h) | Ap |
| Volume (V) | Ap |
| Circumference (c) | Ap |
| Base (b) | Ap |
| Pi ($\pi$) | Ap |
| Calculates perimeter and area of: | |
| square | Ap |
| rectangle | Ap |
| triangle | Ap |
| Calculates circumference of a circle | Ap |
| Reads points on a graph | Ap |
| Connects points on a graph | Ap |
| Interprets graphs | Ap |
| Reads, reproduces and constructs | |
| picture graphs | Ap |
| bar graphs | Ap |
| line graphs | Ap |
| Reads circle graphs | Ap |
| Reads tables | Ap |

GRADE 7
GEOMETRY (cont.)
Level of Ach.

Mis-Digit

| GRADE 8<br>NUMERATION | Level of Ach. |
|---|---|
| Reads and writes numbers. . . . | R |
| Converts verbal numbers to numerical form. . . . . | R |
| Converts numbers to verbal form | R |
| Reads, uses, and creates number lines | |
| with intervals other than 1 | R |
| with fractional parts . . . | R |
| Place Value | |
| Recognizes, identifies, and uses terms for place value . . . . . | R |
| Recognizes, identifies, and uses place value . . . . . | R |
| Rewrites numbers using expanded notation form . . . . . | R |
| Rounds off numbers to: | |
| nearest ten thousandth. . . | M |
| nearest thousandths . . . . | M |
| nearest hundredths. . . . . | R |
| nearest tenths. . . . . | R |
| nearest tens. . . . . | R |
| nearest hundreds. . . . . | R |
| nearest thousands . . . . . | R |
| nearest ten thousands . . . | R |
| nearest hundred thousands . | R |
| nearest millions. . . . . | R |
| Recognizes and uses the term for the term "approximate" $\approx$. . | M |
| Recognizes odd and even numbers | R |
| Distinguishes between amounts demonstrating greater than, less than, equal to, and not equal to: | |
| Recognizes symbols ($>, <, =, \neq, \not>, \not<$) . . . | R |
| Recognizes relative values of numbers . . . . . | R |
| Powers of 10 | |
| Recognizes the term "exponent". | R |
| Uses exponential notation: | |
| Converts from exponential notation to number value. . | M |

| GRADE 8<br>NUMERATION (cont.) | Level of Ach. |
|---|---|
| Converts from number value to exponential notation. . . . | M |
| Exponents | |
| Uses exponential notation for numbers other than 10 raised to first to the fifth power . . . . . | M |
| Converts from exponential notation to expanded form and number value. | M |
| Converts from expanded form and number value to exponential notation . . . . . | M |
| Recognizes and understands the meaning of prime numbers: | |
| up to 100. . . . . | R |
| 100 to 500 . . . . . | Ap |
| Recognizes and understands the meaning of composite numbers . . . | R |
| Finds the prime factors or a number | M |
| Finds greatest common factor (GCF) of numbers . . . . . | M |
| Finds least common multiple of numbers. . . . . | M |
| Recognizes integers. . . . . | Ap |

BASIC OPERATIONS

(addition, subtraction, multiplication, division)

| | |
|---|---|
| Recognizes and uses the proper order of operation . . . . . | M |
| multiplication . . . . . | M |
| division . . . . . | M |
| addition . . . . . | M |
| subtraction. . . . . | M |

| GRADE 8<br>BASIC OPERATIONS (cont.) | Level of Ach. |
|---|---|
| Recognizes and uses terms: | |
| variable. . . . . | Ap |
| equation. . . . . | Ap |
| constant. . . . . | Ap |
| Recognizes the use of zeros in the basic operations. . . . . | R |
| Recognizes the use of the commutative property in addition . . . | R |
| Recognizes the use of the associative property in addition. . . | R |
| Recognizes the use of the commutative property in multiplication | R |
| Recognizes the use of the associative property in multiplication | R |
| Recognizes the use of the distributive property . . . . . | R |
| Adds two to six digit whole numbers . . . . . | R |
| Checks addition of two to six digit whole numbers . . . . . | R |
| Estimates sums of two to six digit whole numbers . . . . . | R |
| Groups of 10's in two to six whole number column addition. . | R |
| Subtracts two to six whole numbers . . . . . | R |
| Recognizes and uses terms:. . . | R |
| subtrahend. . . . . | R |
| minuend . . . . . | R |
| difference. . . . . | R |
| Regroups with zero in two to six digit whole number subtraction . . . . . | R |
| Checks subtraction of two to six digit whole numbers . . . . . | R |
| Estimates differences of two to six whole numbers . . . . . | M |
| Multiplies whole numbers up to four digits by three digits . . | R |

| GRADE 8<br>BASIC OPERATIONS (cont.) | Level of Ach. |
|---|---|
| Recognizes and uses the terms:. . | R |
| factors . . . . . | R |
| products. . . . . | R |
| Recognizes the identity property of one. . . . . | R |
| Uses the multiplication tables up to 10's . . . . . | R |
| Multiples by 10's, 100's, 1000's, etc . . . . . | R |
| Checks multiplication . . . . . | R |
| Estimates products. . . . . | M |
| Divides whole numbers . . . . . | R |
| Recognizes and uses the terms: | |
| quotient. . . . . | R |
| divisor . . . . . | R |
| dividend. . . . . | R |
| remainder . . . . . | R |
| Uses short division with one digit whole number divisors . . . . . | M |
| Divides using two to three digit whole number divisors . . . . . | R |
| Divides with remainders . . . . . | R |
| as whole numbers. . . . . | R |
| as fractional parts . . . . . | R |
| Checks division . . . . . | R |
| Recognizes the use of zeros in division. . . . . | R |
| Estimates quotients . . . . . | M |
| Divides by multiples of 10 and 100 | R |
| Recognizes and uses the divisibility rules for 2, 3, 5, 9. . . . . | M |
| Solves reading problems using all operations with one or more computations. . . . . | Ap |
| Solves simple algebraic equations using addition, subtraction, multiplication, or division. . . . . | Ap |

| GRADE 8<br>FRACTIONS | Level of Ach. |
|---|---|
| Names fractional parts of whole. | R |
| orally<br>writing | |
| Names and identifies the following terms: | |
| numerator. . . . . | R |
| denominator. . . . . | R |
| proper/improper. . . . . | R |
| mixed numbers. . . . . | R |
| common denominator . . . . . | M |
| least common multiple/ least common denominator . . | M |
| Identifies equivalent fractions numerically. . . . . | Ap |
| Converts mixed numbers to improper fractions. . . . . | R |
| Converts improper fractions to mixed numbers. . . . . | R |
| Converts fractions to lowest terms. . . . . | R |
| Compares values of fractions . . | Ap |
| Finds least common denominator (LCM). . . . . | R |
| Adds the following types of fractions: | |
| Proper fractions | |
| like denominators. . . . | R |
| unlike denominators. . . | R |
| Proper fraction and whole number . . . . . | R |
| like denominators. . . . | R |
| unlike denominators. . . | R |
| Proper fraction and mixed number | |
| like denominators. . . . | R |
| unlike denominators. . . | M |
| Mixed and whole numbers. . . | R |
| Mixed numbers | |
| like denominators. . . . | R |
| unlike denominators. . . | M |

| GRADE 8<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Subtracts the following types of fractions: | |
| Proper fraction minus proper fraction | |
| like denominators. . . . . | R |
| unlike denominators. . . . | M |
| Whole number minus proper fraction . . . . . | R |
| Mixed number minus whole number | R |
| Whole number minus mixed number | R |
| Mixed number minus mixed number | |
| like denominators. . . . . | R |
| unlike denominators. . . . | M |
| Multiplies the following types of fractions: | |
| Proper fraction times proper fraction . . . . . | R |
| Whole number times proper fraction . . . . . | R |
| Whole number times mixed number . . . . . | R |
| Mixed number times proper fraction . . . . . | R |
| Mixed number times mixed number . . . . . | M |
| Divides the following types of fractions: | |
| (Recognizes the term-"reciprocal") . . . . . | M |
| Proper fraction by proper fraction . . . . . | M |
| Whole number by proper fraction . . . . . | M |
| Proper fraction by whole number . . . . . | M |
| Mixed number by whole number . | M |
| Whole number by mixed number . | M |

| GRADE 8<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Mixed number by proper fraction. . . . . | M |
| Proper fraction by mixed number. . . . . | M |
| Mixed number by mixed number | M |
| Solves word problems in all areas of fractions. . . . . | Ap |
| Recognizes zero value in fractions . . . . . | M |
| Recognizes ratio. . . . . | Ap |
| Uses proportion . . . . . | Ap |
| Finds missing numbers . . . | Ap |
| Uses proportion in solving problems. . . . . | Ap |
| Concept of decimals | |
| Recognizes the following terms: | |
| decimal point . . . . . | R |
| tenths. . . . . | R |
| hundredths. . . . . | R |
| thousandths . . . . . | R |
| ten thousandths . . . . | M |
| hundred thousandths . . | M |
| millionths. . . . . | M |
| Recognizes place value | |
| up to thousandths . . . . . | R |
| reading<br>writing | |
| beyond thousandths. . . . . | M |
| reading<br>writing | |
| Equates decimals to fractions . | M |
| Equates fractions to decimals . | M |
| Uses zero as a place holder . . | M |
| Adds and subtracts decimals . . | R |
| Multiplies decimals . . . . . | M |

| GRADE 8<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Divides decimals | |
| rounds off answer. . . . . | M |
| decimal by whole number. . | R |
| decimal by decimal . . . . | M |
| whole number by decimal. . | M |
| Solves reading problems using decimals . . . . . | Ap |
| Concept of percent | |
| Recognizes the following terms and symbols: . . . . . | Ap |
| percent<br>percentage (P)<br>%<br>rate (R)<br>base (B) | |
| Converts decimals to percents. | Ap |
| Converts percents to decimals. | Ap |
| Converts fractions to decimal to percents. . . . . | Ap |
| Converts percents to decimals to fractions . . . . . | Ap |
| Recognizes formula for finding percentage<br>R x B = P. . . . . | Ap |
| rate (percent) times base equals percentage | |
| Finds percentage . . . . . | Ap |
| Finds percent (rate) . . . | Ap |
| Finds base . . . . . | Ap |
| Uses proportions in percentage. . . . . | Ap |
| Solves word problems . . . . . | Ap |

| GRADE 8<br>MONEY | Level of Ach. |
|---|---|
| Combines money and makes change-unliminted amounts. . . . . | M |
| Solves two-step word problems involving combining money and making change . . . . . | M |
| Adds, subtracts, multiplies, and divides money . . . . . | R |
| Application of money | |
| Finding interest | |
| Recognizes and uses terms-principle (P), rate (R), time (T), interest (I). . . | Ap |
| Recognizes and uses formula- I = P x R x T. . . | Ap |
| Sales problems | |
| Recognizes and uses terms-regular price, rate of discount, sales price . . . | Ap |
| Computes discounts and sales price . . . . . | Ap |
| Marketing problems | |
| Recognizes and uses terms-rate of mark up, selling price, cost, gross profit, net profit, loss. . | Ap |
| Computes mark up and selling price . . . . . | Ap |
| Finding commission | |
| Recognizes and uses terms-selling price, rate of commission, net proceeds. . | Ap |
| Computes commission and net proceeds. . . . . | Ap |
| Writing checks | |
| Recognizes and uses check-book form . . . . . | Ap |
| Balances checkbook amounts. | Ap |

| GRADE 8<br>TIME | Level of Ach. |
|---|---|
| Reads a calendar. . . . . | R |
| Finds intervals in days . . . . . | R |
| weeks. . . . . | R |
| months . . . . | R |
| years. . . . . | R |
| hours. . . . . | R |
| minutes. . . . | R |
| Solves computational problems using time. . . . . | M |
| Converts the following: | |
| days to weeks<br>months to years . . . . . | R |
| days to years . . . . . | R |
| hours to days . . . . . | R |
| minutes to hours. . . . . | R |
| seconds to minutes. . . . . | R |

MEASUREMENT

| | |
|---|---|
| Recognizes metric prefixes | |
| milli, centi, deci, base unit, deka, hecto, kilo . . . . . | R |
| Uses symbols for feet (') and inches ("). . . . . | R |
| Develops concept of comparative linear measurement. . . . . | R |
| Uses metric and English systems . . . . . | R |
| Works conversion problems within each system. . . . . | M |
| Uses linear measurement | |
| Finds perimeter . . . . . | R |
| Finds area (concept of square units) . . . . . | R |
| Finds volume (concept of cubic units). . . . . | R |

| GRADE 8<br>MEASUREMENT (cont.) | Level of Ach. |
|---|---|
| Reads and uses a ruler to 1/16" intervals. . . | M |
| Reads and uses a meter stick . . . . . | M |
| Works computational problems using linear measurement. . | M |
| Develops concept of liquid measurement. . . . . | R |
| Uses metric and English systems . . . . . | R |
| Works conversion problems within each system. . . . . | M |
| Works computational problems using liquid measurement. . | M |
| Develops concept of mass/weight | R |
| Uses metric and English systems . . . . . | R |
| Works conversion problems within each system. . . . . | M |
| Reads and uses a scale up to 1/4 lb. intervals. . . . | M |
| Works computational problems using mass/weight . . . . . | M |
| Develops concept of temperature | R |
| Uses metric and English systems . . . . . | R |
| Reads and uses a thermometer. . . . . | R |
| Converts C to F . . . . . | Ap |
| Converts F to C . . . . . | Ap |
| Works computation problems using temperature . . . . . | M |
| Develops concept and uses estimation in all areas of measurement. . . . . | M |

| GRADE 8<br>GEOMETRY | Level of Ach. |
|---|---|
| Identifies and reproduces polygons: | |
| Triangles: | |
| right. . . . . | M |
| equilateral. . . . . | M |
| isosceles. . . . . | M |
| obtuse . . . . . | M |
| acute. . . . . | M |
| scalene. . . . . | M |
| Quadrilaterals: | |
| rectangle. . . . . | M |
| parallelogram. . . . . | M |
| trapezoid. . . . . | Ap |
| rhombus. . . . . | Ap |
| square . . . . . | M |
| Identifies: | |
| pentagon . . . . . | Ap |
| hexagon. . . . . | Ap |
| septagon (hectagon). . . . . | Ap |
| octagon. . . . . | Ap |
| nonagon. . . . . | Ap |
| decagon. . . . . | Ap |
| Identifies geometric solids: | |
| cylinder . . . . . | R |
| cone . . . . . | R |
| cube . . . . . | R |
| sphere . . . . . | R |
| pyramid. . . . . | R |
| rectangular solid. . . . . | M |
| Identifies and reproduces: | |
| points . . . . . | R |
| lines. . . . . | R |
| line segments. . . . . | R |
| rays . . . . . | R |
| Angles | |
| right angle. . . . . | Ap |
| obtuse angle . . . . . | Ap |
| acute angle. . . . . | Ap |
| straight angle . . . . . | Ap |
| reflex angle . . . . . | Ap |
| complimentary angles . . . . . | Ap |
| vertical angles. . . . . | Ap |
| Parallel lines . . . . . | Ap |

| GRADE 8<br>GEOMETRY (cont.) | Level of Ach. |
|---|---|
| Corresponding angles | Ap |
| Alternate interior angles | Ap |
| Alternate exterior angles | Ap |
| Intersecting lines | M |
| Perpendicular lines | Ap |
| Uses the protractor to measure and compare angles | Ap |
| Uses the compass for- | |
| Measuring angles | Ap |
| Reproducing angles | Ap |
| Reproducing line segments | Ap |
| Drawing circles | Ap |
| Constructing perpendicular lines | Ap |
| Bisecting line segments | Ap |
| Recognizes, identifies, and uses the following terms and their symbols: | |
| Length (l) | R |
| Width (w) | R |
| Diameter (d) | R |
| Area (A) | R |
| Perimeter (p) | R |
| Radius (r) | R |
| Height (h) | M |
| Volume (V) | M |
| Circumference (c) | M |
| Base (b) | Ap |
| Pi ($\pi$) | Ap |
| Calculates perimeter and area of: | |
| Square | M |
| Rectangle | M |
| Triangle | Ap |
| Calculates circumference of circle | |
| Using only the symbol $\pi$ | Ap |
| Using $\pi = 22/7$ | Ap |
| Using $\pi = 3.14$ | Ap |
| Calculates area of: | |
| Parallelogram | K |
| Trapezoid | K |
| Circle | K |
| Calculates volume | |
| Cubes | K |
| Rectangular solid | K |
| Cylinder | K |

| GRADE 8<br>GEOMETRY (cont.) | Level of Ach. |
|---|---|
| Reads points on a graph | M |
| Connects points on a graph | M |
| Interprets graph | Ap |
| Reads, reproduces, and constructs | |
| Picture graphs | M |
| Bar graphs | M |
| Line graphs | M |
| Reads circle graphs | M |
| Reads tables | Ap |
| Plots points on coordinate plane | K |
| Reads road maps | K |

| GRADE 9<br>NUMERATION | Level of Ach. |
|---|---|
| Reads and writes numbers. . . . . | R |
| Converts verbal numbers to numerical form. . . . . | R |
| Converts numbers to verbal form. . . . . | R |
| Reads, uses and creates number lines -including negative #'s . . | M |
| Place Value | |
| Recognizes, identifies, and uses terms for place value . . . . . | R |
| Recognizes, identifies, and uses place value . . . . . | R |
| Rewrites numbers using expanded notation form . . . . . | R |
| Rounds off numbers to: | |
| nearest ten thousandths . . . | R |
| nearest thousandths . . . . . | R |
| nearest hundredths. . . . . | R |
| nearest tenths. . . . . | R |
| nearest tens. . . . . | R |
| nearest hundreds. . . . . | R |
| nearest thousands . . . . . | R |
| nearest ten thousands . . . . | R |
| nearest hundred thousands . . | R |
| nearest millions . . . . . | R |
| Recognizes odd and even numbers . | R |
| Distinguishes between amounts demonstrating greater than, less than, equal to, and not equal to: | |
| Recognizes symbols ($>, <, =, \neq, \not<$) . . . . . | R |
| Recognizes relative values of numbers . . . . . | R |
| Powers of 10 | |
| Recognizes the term "exponent". . | M |
| Uses whole number exponent. . . . | M |
| Uses exponential notation: | |
| Converts from exponential notation to number value. . . | M |
| Converts from number value to exponential notation . . . | M |

| GRADE 9<br>NUMERATION (cont.) | Level of Ach. |
|---|---|
| Exponents | |
| Uses exponential notation for numbers other than 10 raised to first to the fifth power. . . . . | M |
| Converts from exponential notation to expanded form and number value . . . . . | M |
| Converts from expanded form and number value to exponential notation. . . . . | M |
| Recognizes and understands the meaning prime numbers: | |
| up to 100 . . . . . | R |
| 100 to 500. . . . . | Ap |
| Recognizes and understands the meaning of composite numbers. . . . . | R |
| Finds the prime factors of a number | R |
| Finds greatest common factor (GCF) of numbers. . . . . | R |
| Finds least common multiple of numbers . . . . . | R |
| Recognizes integers . . . . . | M |
| Develops the concept of snd uses absolute value. . . . . | K |
| Recognizes and uses the roots of numbers . . . . . | K |
| BASIC OPERATIONS | |
| (Addition, Subtraction, Multiplication, Division) | |
| Recognizes and uses the proper order of operations . . . . . | R |
| Multiplication . . . . . | R |
| Division . . . . . | R |
| Addition . . . . . | R |
| Subtraction . . . . . | R |

| GRADE 9<br>BASIC OPERATIONS (cont.) | Level of Ach. |
|---|---|
| Recognizes and uses terms: | |
| Variable | M |
| Equation | M |
| Constant | M |
| Recognizes the use of zero in the basic operations | R |
| Recognizes the uses of the commutative and associative properties in addition | R |
| Recognizes the use of the commutative and associative properties in multiplication | R |
| Recognizes the use of the distributive property in multiplication | R |
| Adds two to six digit whole numbers | R |
| Checks addition of two to six digit whole numbers | R |
| Estimates sums of two to six digit whole numbers | R |
| Groups by 10's in 2-6 digit whole number column addition | R |
| Adds whole numbers mentally | Ap |
| Solves addition problems with integers | Ap |
| Subtracts two to six digit whole numbers | R |
| Regroups and uses terms: | |
| subtrahend | R |
| minuend | R |
| difference | R |
| Regroups with zeros in 2-6 digit whole number subtraction | R |
| Checks subtraction of 2-6 digit whole numbers | R |
| Estimates differences of 2-6 digit whole numbers | M |
| Subtracts whole numbers mentally | Ap |

| GRADE 9<br>BASIC OPERATIONS (cont.) | Level of Ach. |
|---|---|
| Solves subtraction problems with integers | Ap |
| Multiplies whole numbers up to four digits by three digits | R |
| Recognizes and uses the terms: | |
| factor | R |
| product | R |
| Recognizes the identity property of one | R |
| Uses the multiplication tables up to 10's | R |
| Recognizes the use of zero in multiplication | R |
| Multiplies by 10's, 100's, 1000's, etc | R |
| Checks multiplication | R |
| Casts out nines in check | Ap |
| Estimates products | M |
| Uses shortcuts for multiplication: | |
| by 50 | Ap |
| by 25 | Ap |
| by 11 | Ap |
| Solves multiplication problems using integers | Ap |
| Divides whole numbers by up to three divisiors | R |
| Recognizes and uses terms- | |
| quotient | R |
| divisor | R |
| dividend | R |
| remainder | R |
| Uses short division with one digit divisor | R |
| Divides with remainders: | |
| as whole | R |
| as fractional parts | R |
| Checks division | R |
| Recognizes the use of zeros in division | R |

| GRADE 9<br>BASIC OPERATIONS (cont.) | Level of Ach. |
|---|---|
| Estimates quotients. . . . . | M |
| Divides multiples by 10's, 100's, 1000's, etc. . . . . | R |
| Recognizes and uses the divisibility rules for 2, 3, 5, 9, 4. . . . . | R |
| Solves division problems using integers . . . . . | Ap |
| Solves reading problems using all operations with one or more computations . . . . . | M |
| Solves simple algebraic equations using addition, subtraction, multiplication, or division. . . | M |
| Recognizes the squares of numbers 1 to 15. . . . . | M |

## FRACTIONS

| | |
|---|---|
| Names fractional parts of whole . | R |
| orally<br>writing | |
| Names and identifies the following terms: | |
| numerator. . . . . | R |
| denominator. . . . . | R |
| proper/improper. . . . . | R |
| mixed numbers. . . . . | R |
| common denominator . . . . . | R |
| least common denominator/ least common multiple. . . . | R |
| Identifies equivalent fractions-numerically. . . . . | R |
| Converts mixed numbers to improper fractions. . . . . | R |
| Converts improper fractions to mixed numbers. . . . . | R |

| GRADE 9<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Converts fractions to lowest terms | R |
| Compares values of fractions . . . | M |
| Finds least common denominator (LCM). . . . . | R |
| Adds the following types of fractions: | |
| Proper fractions | |
| like denominators. . . . . | R |
| unlike denominators. . . . | R |
| Mixed numbers | |
| like denominators. . . . . | R |
| unlike denominators. . . . | R |
| Proper, mixed numbers, and whole numbers | |
| like denominators. . . . . | R |
| unlike denominators. . . . | R |
| Subtracts the following types of fractions: | |
| Proper fractions | |
| like denominators. . . . . | R |
| unlike denominators. . . . | R |
| Whole numbers minus proper fractions . . . . . | R |
| Mixed numbers minus proper numbers . . . . . | R |
| Mixed numbers mixed numbers | |
| like denominators . . . . . | R |
| unlike denominators . . . . | R |
| Multiplies the following types of fractions: | |
| Proper fractions times proper fractions. . . . . | R |
| Whole numbers times proper fractions. . . . . | R |
| Whole number times mixed numbers . . . . . | R |
| Mixed numbers times proper fractions. . . . . | R |
| Mixed number times mixed number. . . . . | R |

| GRADE 9<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Divides the following types of fractions and recognizes term-reciprocal: | R |
| Proper fraction divided by proper fractions | R |
| Whole number divided by proper fraction | R |
| Proper fraction divided by whole number | R |
| Mixed number divided by whole number | R |
| Whole number divided by mixed number | R |
| Mixed number divided by proper fraction | R |
| Proper fraction divided by mixed numbers | R |
| Mixed number divided by mixed number | R |
| Solves word problems in all areas of fractions | M |
| Recognizes zero value in fractions | R |
| Recognizes ratio | M |
| Uses proportion | M |
| Finds missing number | M |
| Uses proportion is solving problems | M |
| Concept of decimals | |
| Recognizes the following terms: | |
| decimal point | R |
| tenths | R |
| hundredths | R |
| thousandths | R |
| ten thousandths | R |
| hundred thousandths | R |
| millionths | R |

| GRADE 9<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Recognizes place value | |
| up to hundredths | |
| reading | R |
| writing | R |
| up to thousandths | |
| reading | R |
| writing | R |
| beyond thousandths | |
| reading | R |
| writing | R |
| Equates decimals to fractions | M |
| Equates fractions to decimals | M |
| Uses zero as a place holder in decimal | R |
| Adds and subtracts decimals | R |
| Multiplies decimals | R |
| Divides decimals | |
| Rounds off answers | R |
| Divides whole number into decimal | R |
| Divides decimal into decimal | R |
| Divides decimal into whole number | R |
| Solves reading problems using decimals | M |
| Concept of percent | |
| Recognizes the following terms and symbols: | |
| percent | Ap |
| percentage (P) | Ap |
| % | Ap |
| rate (R) | Ap |
| base (B) | Ap |
| Converts from decimal to percent | Ap |
| Converts from percent to decimal | Ap |

| GRADE 9<br>FRACTIONS (cont.) | Level of Ach. |
|---|---|
| Converts fractions to decimals to percent. . . . . | Ap |
| Converts percent to decimals to fractions. . . . . | Ap |
| Recognizes formula for finding percentage (R x B =P) . | Ap |
| Rate (percent) times base equals percentage | |
| finds percentage. . . . | Ap |
| finds percent rate. . . | Ap |
| finds base. . . . . | Ap |
| Uses proportions in percentage . . . . . | Ap |
| Solves word problems. . . . | Ap |

| GRADE 9<br>MONEY (cont.) | Level of Ach. |
|---|---|
| Computes discounts and sale price. . . . . | Ap |
| Marketing Problems | |
| Recognizes and uses terms-rate of mark up, selling price, cost, gross profit, net profit, loss. | Ap |
| Computes mark up and selling price . . . . . | Ap |
| Finding Commission | |
| Recognizes and uses terms-selling price, rate of commission, net proceeds. | Ap |
| Computes commission and net proceeds. . . . . | Ap |
| Writing Checks | |
| Recognizes and uses checkbook form. . . . . | Ap |
| Balances checkbook amounts . . . . . | Ap |

## MONEY

| | |
|---|---|
| Combines money and makes change-unlimited amounts . . . . . | R |
| Solves two-step word problems involving combining money and making change . . . . . | R |
| Adds, subtracts, multiplies and divides money . . . . . | R |
| Application of Money | |
| Finding interest | |
| Recognizes and uses terms-principle (P), rate (R), time (T), interest (I). . . . . | Ap |
| Recognizes and uses formula I = P x R x T . | Ap |
| Sales problems | |
| Recognizes and uses terms-regular price, rate of discount, sales price . | Ap |

## TIME

| | |
|---|---|
| Finds intervals in days . . . . . | R |
| weeks. . . . . | R |
| months . . . . | R |
| years. . . . . | R |
| hours. . . . . | R |
| minutes. . . . | R |
| Solves computational problems using time. . . . . | M |

| GRADE 9<br>MEASUREMENT | Level of Ach. |
|---|---|
| Recognizes metric prefixes-milli, centi, deci, base unit, deka, hecto, kilo. . . . . | R |
| Uses symbols for feet (') and inches (") . . . . . | R |
| Develops concept of comparative linear measurement . . . . . | R |
| Uses metric and English systems. . . . . | R |
| Works conversion problems within each systme . . . . . | R |
| Uses linear measurement | |
| Finds perimeter. . . . . | R |
| Finds area (concept of square units). . . . . | R |
| Finds volume (concept of cubic units) . . . . . | R |
| Reads and uses a ruler to 1/16" intervals. . . . . | R |
| Reads and uses a meter stick. . . . . | R |
| Works computational problems using linear measurement . . | R |
| Develops concept of liquid measurement. . . . . | R |
| Uses metric and English systems. . . . . | R |
| Works conversion problems within each system . . . . . | R |
| Works computational problems using liquid measurement . . | R |
| Develops concept of mass/weight. | R |
| Uses metric and English systems. . . . . | R |
| Works conversion problems within each system . . . . . | R |
| Reads and uses a scale up to 1/4 lb. intervals. . . . . | R |
| Works computational problems using mass/weight. . . . . | R |

| GRADE 9<br>MEASUREMENT (cont.) | Level of Ach. |
|---|---|
| Develops concept of temperature. . | R |
| Uses metric and English systems. . . . . | R |
| Reads and uses a thermometer'. | R |
| Converts C to F. . . . . | Ap |
| Converts F to C. . . . . | Ap |
| Works computational problems using temperature within each system. . . . . | M |
| Develops concept and uses estimation in all areas of measurement. . . . | M |

GEOMETRY

| | |
|---|---|
| Identifies and reproduces polygons: | |
| Triangles | |
| right. . . . . | R |
| equilateral. . . . . | R |
| isosceles. . . . . | R |
| obtuse . . . . . | R |
| acute. . . . . | R |
| scalene. . . . . | R |
| Quadrilaterals | |
| rectangle. . . . . | R |
| parallelogram. . . . . | R |
| trapezoid. . . . . | R |
| rhombus. . . . . | R |
| square . . . . . | R |
| Identifies: | |
| pentagon . . . . . | M |
| hexagon. . . . . | M |
| septagon . . . . . | M |
| octagon. . . . . | M |
| nonagon. . . . . | M |
| decagon. . . . . | M |

| GRADE 9<br>GEOMETRY (cont.) | Level of Ach. |
|---|---|
| Identifies and reproduces: | |
| points | R |
| lines | R |
| line segments | R |
| rays | R |
| Angles | |
| right angle | R |
| obtuse angle | R |
| acute angle | R |
| straight angle | M |
| reflex angle | Ap |
| complimentary angles | Ap |
| supplementary angles | Ap |
| vertical angles | M |
| Perpendicular lines | |
| Parallel lines | R |
| corresponding angles | Ap |
| alternate interior angles | Ap |
| alternate exterior angles | Ap |
| Intersecting lines | R |
| Uses protractor to measure and compare angles | M |
| Uses the compass for- | |
| measuring angles | M |
| reproducing anlges | M |
| reproducing line segments | R |
| drawing circles | R |
| constructing perpendicular lines | R |
| bisecting line segments | R |
| Recognizes and identifies and uses the following terms and their symbols: | |
| length (l) | R |
| width (w) | R |
| diameter (d) | R |
| area (A) | R |
| perimeter (p) | R |
| radius (r) | R |
| height (h) | R |
| volume (V) | R |
| circumference (c) | R |
| base (b) | M |
| pi ($\pi$) | M |

| GRADE 9<br>GEOMETRY (cont.) | Level of Ach. |
|---|---|
| Calculates perimeter and area of: | |
| square | R |
| rectangle | R |
| triangle | M |
| Calculates circumference of circle | |
| Using only the symbol $\pi$ | M |
| Using $\pi$ = 22/7 | M |
| Using $\pi$ = 3.14 | M |
| Calculates areas of: | |
| parallelogram | Ap |
| trapezoid | Ap |
| circle | Ap |
| Calculates volume of: | |
| cubes | Ap |
| rectangular solid | Ap |
| cylinder | Ap |
| cone | Ap |
| pyramid | Ap |
| sphere | Ap |
| Reads points on a graph | R |
| Connects points on a graph | R |
| Reads, reproduces and constructs: | |
| picture graphs | R |
| bar graphs | R |
| line graphs | R |
| Interprets graphs | M |
| Reads circle graphs | R |
| Reads tables | Ap |
| Plots points on coordinate plane | Ap |
| Reads road maps | Ap |

Mis-Digits

| GRADE 10<br>FUNDAMENTAL MATHEMATICS SKILLS | Level of Ach. |
|---|---|
| NUMERATION: | |
| Reads, uses and creates number lines including negative numbers. | M |
| Rounds off numbers. . . . . | R |
| Uses exponential notation . . . . | M |
| Converts from exponential notation to expanded form and number value. . . . . | M |
| Converts from expanded form or number value to exponential notation. . . . . | M |
| Recognizes and understands the meaning of prime numbers and prime factorization . . . . . | R |
| Recognizes integers . . . . . | R |
| Finds roots of numbers | |
| using tables. . . . . | M |
| using algorithm . . . . . | Aw |
| using approximation method. . | Ap |
| Uses digital calculator . . . . . | Ap |
| BASIC OPERATIONS: | |
| Recognizes and uses the proper order of operations . . . . . | R |
| Recognizes and uses terms . . . . | R |
| variable<br>equation<br>constant | |
| Adds non-negative numbers (includes whole numbers, fractions and decimals) . . . . . | R |
| Adds signed numbers . . . . . | M |
| Checks addition . . . . . | R |
| Estimates sums. . . . . | R |

| GRADE 10<br>FUNDAMENTAL MATHEMATICS SKILLS | Level of Ach. |
|---|---|
| BASIC OPERATIONS (cont.): | |
| Groups by 10's in column addition. | R |
| Adds mentally. . . . . | M |
| Subtracts non-negative numbers . . | R |
| Subtracts signed numbers . . . . . | M |
| Checks subtraction . . . . . | R |
| Estimates using subtraction. . . . | R |
| Subtracts mentally . . . . . | M |
| Multiplies by 10, 100, 1000, etc.. | R |
| Multiplies non-negative numbers. . | R |
| Multiplies signed numbers. . . . . | M |
| Checks multiplication. . . . . | R |
| Estimates using multiplication . . | R |
| Uses short cuts for multiplication (by 25, 50, 11). . . . . | M |
| Multiplies mentally. . . . . | M |
| Divides non-negative numbers | |
| using short division . . . . . | R |
| using long division. . . . . | R |
| Divides signed numbers . . . . . | M |
| Divides with remainder | |
| as fractional parts. . . . . | R |
| as decimals. . . . . | Ap |
| Checks division. . . . . | R |
| Estimates using division . . . . . | R |
| Divides by multiples of 10, 100, etc. . . . . | R |
| Uses divisibility rules for 2, 3, 4, 5, 9 . . . . . | R |
| Divides mentally . . . . . | M |

| GRADE 10 FUNDAMENTAL MATHEMATICS SKILLS | Level of Ach. |
|---|---|
| BASIC OPERATIONS (cont.): | |
| Solves reading problems involving all operations and using more than one computation. . . . . | M |
| Solves linear equation using two or more operations . . . . . | K |
| FRACTIONS: | |
| Identifies and uses equivalent fractions. . . . . | R |
| Converts mixed numbers to improper fractions. . . . . | R |
| Converts improper fractions to mixed numbers. . . . . | R |
| Compares values of fractions . . | M |
| Recognizes ratios | |
| Uses proportions | |
| Finds missing numbers. . . . | M |
| Uses proportions in solving problems . . . . . | M |
| Equates decimals, fractions, and percents . . . . . | M |
| Percentage | |
| Recognizes the following terms and symbols: . . . . . | M |
| percent<br>percentage (P)<br>%<br>rate (R)<br>base (B) | |
| Uses formula for finding percentage $P = R \times B$. . . . . | M |
| Finds percentage . . . . . | M |
| Finds rate . . . . . | M |
| Finds base . . . . . | M |
| Solves reading problems using percentage . . . . . | M |

| GRADE 10 PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| CONSUMER GOODS AND SERVICES: | |
| Demonstrates an awareness of the types of credit available and an understanding of the cost of each, (i.e. charge accounts, installment buying, etc.). . . . . | Aw |
| Demonstrates a knowledge of the requirements for establishing and maintaining a good credit rating | Aw |
| Demonstrates awareness of various types of purchasing agreements such as cash payment and deferred payment plans . . . . . | Aw |
| Computes discounts and discount rates. . . . . | Ap |
| Demonstrates the ability to make change . . . . . | R |
| Demonstrates the ability to read and interpret sales receipts . . | K |
| Describes the advantages and disadvantages of various types of stores and businesses, (i.e. department stores, supermarkets, discount stores, retail stores, wholesale outlets, cooperatives) . . . . . | K |
| Demonstrates the ability to compare quality and price of various products (comparison shopping) . . . . . | K |
| TAXES: | |
| Calculates sales tax on taxable items. . . . . | Ap |
| Demonstrates a knowledge of and the ability to compute income tax (i.e. federal, state, and local) . . . | K |

74

| GRADE 10<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| **MEASUREMENT (GEOMETRY):** | |
| Demonstrates a knowledge of graphs | |
| reads | R |
| interprets | R |
| constructs | R |
| Demonstrates a knowledge of tables | |
| reads | Ap |
| interprets | K |
| Demonstrates a knowledge of maps | |
| reads | Ap |
| interprets | K |
| Demonstrates a knowledge of product weights | K |
| Demonstrates a knowledge of household measurements | K |
| Demonstrates a knowledge of scale drawings and field measurements | Ap |
| Works with measuring instruments | M |
| Demonstrates an ability to work with angles | R |
| Demonstrates a knowledge of probability | Aw |
| Demonstrates an understanding of the English system of measurement | R |
| Demonstrates an understanding of the metric system of measurement | R |
| **TRANSPORTATION:** | |
| Calculates fares | |
| taxi | Aw |
| bus | Aw |
| air | Aw |
| train | Aw |
| Demonstrates a knowledge of traveling using road maps | Ap |

| GRADE 10<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| **INSURANCE:** | |
| Demonstrates a knowledge of insurance | |
| school insurance plans | Ap |
| homeowners (fire) | Ap |
| health insurance | Ap |
| **PERSONAL INCOME:** | |
| Calculates job income | |
| hourly | Ap |
| piece rate | Ap |
| commission | Ap |
| bonuses | Aw |
| Calculates payroll deductions (social security, federal income tax, state income tax, wage tax, retirement, medical plan, etc) | K |
| Reads and understands payroll stubs | K |
| Writes a budget with | |
| long and short range planning | Aw |
| **BANKING AND FINANCING:** | |
| Bank Services | |
| Uses a checking account | Ap |
| Balances a checkbook<br>Writes checks<br>Completes deposit slips<br>Understands the regulations governing checking accounts | |
| Uses a savings account | K |
| Calculates interest<br>Understands the regulations governing savings accounts | |

| GRADE 10<br>PRACTICAL APPLICATIONS | Level of Ach. | GRADE 10<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|---|---|
| BANKING AND FINANCING (cont.): | | | |
| Uses checks. . . . . | Aw | | |
| Demonstrates a knowledge of different kinds of checks- | | | |
| certified<br>payroll<br>travelers<br>personal<br>money orders | | | |
| Understands the procedures for cashing different kinds of checks | | | |
| Financing Services | | | |
| Demonstrates a knowledge of bank loans. . . . . | K | | |
| Demonstrates a knowledge of other loan agencies. . . . . | K | | |
| Demonstrates a knowledge of credit unions. . . . . | K | | |

| GRADE 11<br>FUNDAMENTALS MATHEMATICS SKILLS | Level of Ach. |
|---|---|
| NUMERATION: | |
| Reads, uses and creates number lines including negative numbers | R |
| Rounds off numbers and uses the procedure in practical applications . . . . . | Ap |
| Uses exponential notation. . . . | R |
| Converts from exponential notation to expanded form and number value | |
| Converts from expanded form and number value to exponential notation | |
| Recognizes and understands the meaning of prime numbers and prime factorization. . . . . | R |
| Finds roots of numbers | |
| using tables . . . . . | R |
| using algorithms . . . . . | K |
| using approximation method . | M |
| Uses digital calculator. . . . . | Ap |
| BASIC OPERATIONS: | |
| Addition: | |
| Adds non-negative numbers (includes whole numbers, fractions and decimals). . . . . | R |
| Adds signed numbers. . . . . | R |
| Checks addition. . . . . | R |
| Estimates sums . . . . . | R |
| Groups by 10's in column addition | R |
| Adds mentally. . . . . | Ap |

| GRADE 11<br>FUNDAMENTAL MATHEMATICS SKILLS | Level of Ach. |
|---|---|
| Subtraction: | |
| Subtracts non-negative numbers. . | R |
| Subtracts signed numbers. . . . . | R |
| Checks subtraction. . . . . | R |
| Estimates differences . . . . . | R |
| Subtracts mentally. . . . . | Ap |
| Multiplication: | |
| Multiplies by 10's, 100's, 1000's, etc . . . . . | R |
| Multiplies non-negative numbers . | R |
| Multiplies signed numbers . . . . | R |
| Checks multiplication . . . . . | R |
| Estimates products. . . . . | R |
| Uses short cuts for multiplication (by 25, 50, 11) . . . . . | Ap |
| Multiplies mentally . . . . . | Ap |
| Division: | |
| Divides non-negative numbers | |
| short division. . . . . | R |
| long division . . . . . | R |
| Divides with remainders | |
| as fractional parts . . . . . | R |
| as decimals . . . . . | M |
| Checks division . . . . . | R |
| Estimates quotients . . . . . | R |
| Divides by 10's, 100's, etc . . . | R |
| Divides signed numbers. . . . . | R |

| GRADE 11<br>FUNDAMENTAL MATHEMATICS SKILLS | Level of Ach. |
|---|---|
| Division (cont.): | |
| Uses divisibility rules for 2, 3, 4, 5, 9. . . . . | R |
| Divides mentally . . . . . | Ap |
| Solves reading problems involving all operations and more than one computation. . . . . | R |
| Solves linear equations. . . . . | Ap |
| FRACTIONS: | |
| Identifies and uses equivalent fractions. . . . . | R |
| Compares values of fractions . . . | R |
| Recognizes ratios and proportions. . . . . | R |
| Finds missing numbers. . . . . | R |
| Uses proportions in solving problems . . . . . | R |
| Equates decimals, fractions, and per cents. . . . . | R |
| Percentage | |
| Recongizes the following terms and symbols: | |
| percent | |
| percentage (P) | |
| % | |
| rate (R) | |
| base (B) | |
| Uses formula for finding percentage P = R x B | |
| Finds percentage (P) . . . . . | R |
| Finds rate (R) . . . . . | R |
| Finds base (B) . . . . . | R |
| Solves reading problems using percentage . . . . . | M |

| GRADE 11<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| CONSUMER GOODS AND SERVICES: | |
| Demonstrates a knowledge of the types of credit available and an understanding of the cost of each, (i.e. charge accounts, installment buying, etc.). . . . . | K |
| Demonstrates a knowledge of the requirements for establishing and maintaining a good credit rating . . | K |
| Demonstrates a knowledge of various types of purchasing agreements such as cash payment and deferred payment plans . . . . . | K |
| Demonstrates a knowledge of the effect of inflationary and deflationary trends upon the profit motive . . . . . | Aw |
| Computes discounts and discount rates. . . . . | M |
| Demonstrates the ability to make change . . . . . | R |
| Demonstrates the ability to read and interpret sales receipts . . . . . | M |
| Describes the advantage and disadvantage of various types of stores and businesses, (i.e. department stores, supermarkets, discount stores, retail stores, wholesale outlets, cooperatives) . . . . . | Ap |
| Uses pertinent information as a basis for evaluating and obtaining estimates on services and products of various types . . . . . | Aw |
| Demonstrates an ability to use the mathematical skills effectively in computing scores and costs of leisurely services and activities (vacation package) . . . . . | K |
| Demonstrates the ability to compare quality and price of various products . . . . . | Ap |

| GRADE 11<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| TAXES: | |
| Calculates sales tax on taxable items | M |
| Demonstrates a knowledge of and an ability to compute income tax (i.e. federal, state, and local) | Ap |
| Demonstrates an awareness of existing per capita taxes | Aw |
| Demonstrates an awareness of existing occupational privilege taxes | Aw |
| Demonstrates a knowledge of real estate taxes | K |
| Demonstrates a knowledge of gasoline tax | Ap |
| MEASUREMENT (GEOMETRY): | |
| Demonstrates a knowledge of tables | |
| reads | M |
| interprets | Ap |
| Demonstrates a knowledge of maps | |
| reads | M |
| interprets | Ap |
| Demonstrates a knowledge of product weights | Ap |
| Demonstrates a knowledge of household measurements | Ap |
| Demonstrates a knowledge of scale drawings and field measurements | M |
| Demonstrates a knowledge of geometric figures | |
| square | R |
| cubes | R |
| rectangles | R |
| triangles | R |
| prisms | R |
| cylinders | R |
| pyramids | R |
| cones | R |

| GRADE 11<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| Demonstrates a knowledge of probability | Ap |
| TRANSPORTATION: | |
| Calculates fares | |
| taxi | K |
| bus | K |
| air | K |
| train | K |
| Demonstrates a knowledge of automobile ownership | |
| purchasing costs | K |
| operating costs | K |
| traveling by road maps | M |
| figuring traveling costs | K |
| depreciation | Aw |
| INSURANCE: | |
| Demonstrates a knowledge of insurance | |
| school insurance plans | M |
| life | K |
| automobile (motorcycles, etc.) | Ap |
| homeowners (fire) | Ap |
| health insurance | Ap |
| PERSONAL INCOME: | |
| Calculates job income | |
| hourly | M |
| piece-rate | M |
| commission | Ap |
| bonuses | K |

| GRADE 11<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| PERSONAL INCOME (cont.): | |
| Calculates payroll deductions (social security, fed. inc. tax, state inc. tax, wage tax, retirement, medical plan, etc.). | Ap |
| Reads and understands payroll stubs. . . . . | Ap |
| Writes a budget | |
| long and short range planning | K |
| Demonstrates a knowledge of retirement income. . . . . | K |
| Social Security benefits . . | K |
| Retirement plans . . . . . | K |
| Retirement income from annuities. . . . . | K |
| Demonstrates a knowledge of fringe benefits. . . . . | Aw |
| BANKING AND FINANCING: | |
| Banking Services | |
| Uses a checking account. . . | M |
| Balances a checkbook | |
| Writes checks | |
| Completes deposit slips | |
| Understands the regulations governing checking accounts | |
| Uses a savings account . . . | Ap |
| Calculates interest | |
| Understands the regulations governing savings accounts | |
| Uses checks. . . . . | Ap |
| Demonstrates a knowledge of different kinds of checks | |
| certified | |
| payroll | |
| travelers | |
| personal | |
| money order | |

| GRADE 11<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| BANKING AND FINANCING (cont.): | |
| Understands the procedure for cashing different kinds of checks | |
| Demonstrates a knowledge of special accounts offered by banking institutions (Christmas clubs, vacation clubs, etc. . .). . . . . | K |
| Financing Services | |
| Demonstrates a knowledge of bank loans. . . . . | Ap |
| Demonstrates a knowledge of other loan agencies. . . . . | Ap |
| Demonstrates a knowledge of credit unions . . . . . | Ap |

| GRADE 12<br>FUNDAMENTAL MATHEMATICS SKILLS | Level of Ach. |
|---|---|
| **NUMERATION:** | |
| Rounds off numbers and uses the procedure in practical applications. . . . . | M |
| Uses exponential notation. . . . | R |
| Converts from exponential notation to expanded form and number value . . . . . | R |
| Converts from expanded form and number value to exponential notation. . . . . | R |
| Recognizes and understands the meaning of prime numbers and prime factorization. . . . . | R |
| Finds roots of numbers | |
| using tables . . . . . | R |
| using approximation method . | R |
| using algorithm. . . . . | K |
| Uses digital calculator. . . . . | Ap |
| **BASIC OPERATIONS:** | |
| Addition: | |
| Adds non-negative numbers (including whole numbers, fractions, and decimals). . . . . | R |
| Adds signed numbers. . . . . | R |
| Checks addition. . . . . | R |
| Estimates sums . . . . . | R |
| Groups by 10's in column addition | R |
| Adds mentally. . . . . | M |

| GRADE 12<br>FUNDAMENTAL MATHEMATICS SKILLS | Level of Ach. |
|---|---|
| Subtraction: | |
| Subtracts non-negative numbers. . | R |
| Subtracts signed numbers. . . . . | R |
| Checks subtraction. . . . . | R |
| Estimates differences . . . . . | R |
| Subtracts mentally. . . . . | M |
| Multiplication: | |
| Multiplies by 10, 100, 1000, etc. | R |
| Multiplies non-negative numbers . | R |
| Multiplies signed numbers . . . . | R |
| Checks multiplication . . . . . | R |
| Estimates products. . . . . | R |
| Uses short cuts for multiplication (by 25, 50, 11) . . . . . | M |
| Multiplies mentally . . . . . | M |
| Division: | |
| Divides non-negative numbers using: | |
| short division. . . . . | R |
| long division . . . . . | R |
| Divides signed numbers. . . . . | R |
| Divides with remainders: | |
| as fractional parts . . . . . | R |
| as decimals . . . . . | R |
| Checks division . . . . . | R |
| Estimates quotients . . . . . | R |

| GRADE 12 FUNDAMENTAL MATHEMATICS SKILLS | Level of Ach. |
|---|---|
| Division (cont.): | |
| Divides by 10's, 100's, 1000's, etc. | R |
| Uses divisibility rules for 2, 3, 4, 5, 9. | R |
| Divides mentally | M |
| Solves reading problems involving all operations and more than one computation. | M |
| Solves linear equations. | M |
| FRACTIONS: | |
| Compares values of fractions | R |
| Recognizes ratios and proportions: | R |
| Finds missing numbers. | R |
| Uses proportions in solving problems | R |
| Equates decimals, fractions, and percents | R |
| Percentage | |
| Uses formula for finding percentage P = R x B | |
| Finds percentage (P) | R |
| Finds rate (R) | R |
| Finds base (B) | R |
| Solves reading problems using percentage | M |

| GRADE 12 PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| CONSUMER GOODS AND SERVICES: | |
| Demonstrates a knowledge of the types of credit available and understanding of the cost of each, (i.e. charge accounts, installment buying, credit cards, etc.). | Ap |
| Demonstrates a knowledge of the requirements for establishing and maintaining a good credit rating | Ap |
| Demonstrates a knowledge of various types of purchasing agreements such as cash payments and deferred payment plans. | Ap |
| Demonstrates a knowledge of the effect of inflationary and deflationary trends upon the profit motive. | K |
| Computes discounts and discount rates. | R |
| Demonstrates the ability to make change | R |
| Demonstrates the ability to read and interpret sales receipts | R |
| Demonstrates a knowledge of the relationships between wholesale and retail prices. | K |
| Describes the advantages and disadvantages of various types of stores and businesses, (i.e. department stores, supermarkets, discount stores, retail stores, wholesale outlets, cooperatives) | M |
| Determines the effect that proposed tariffs or trade laws will have on future trade prices, domestically and internationally. | Aw |
| Uses pertinent information as a basis for evaluating and obtaining estimates on services and products of various types | K |
| Demonstrates an ability to use the mathematical skills effectively in computing scores and costs of leisurely services and activities. | Ap |

| GRADE 12<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| **CONSUMER GOODS AND SERVICES (cont.):** | |
| Demonstrates the ability to compare quality and price of various products. . . . . | M |
| Demonstrates an understanding of guarantees and warranties. . | Aw |
| **TAXES:** | |
| Calculates sales tax on taxable items . . . . . | R |
| Demonstrates a knowledge of and ability to compute income taxes, (i.e. federal, state, and local) | M |
| Demonstrates a knowledge of existing per capita taxes . . . | K |
| Demonstrates a knowledge of existing occupational privilege taxes . . . . . | K |
| Demonstrates the ability to compute real estates taxes. . . | Ap |
| Demonstrates ability to compute gasoline tax. . . . . | M |
| **MEASUREMENT (GEOMETRY):** | |
| Demonstrates a knowledge of tables | |
| reads . . . . . | R |
| interprets. . . . . | M |
| Demonstrates a knowledge of maps | |
| reads . . . . . | R |
| interprets. . . . . | M |
| Demonstrates a knowledge of product weights . . . . . | M |
| Demonstrates a knowledge of household measurements . . . . . | M |

| GRADE 12<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| **MEASUREMENT (GEOMETRY) (cont.):** | |
| Demonstrates a knowledge of scale drawings and field measurements. . | R |
| Demonstrates a knowledge of probability. . . . . | Ap |
| **TRANSPORTATION:** | |
| Demonstrates a knowledge of leasing vehicles . . . . . | K |
| Demonstrates a knowledge of automobile ownership | |
| purchasing costs . . . . . | Ap |
| operating costs. . . . . | Ap |
| traveling by road maps . . . . | R |
| figuring trading costs . . . . | Ap |
| depreciation . . . . . | K |
| **INSURANCE:** | |
| Demonstrates a knowledge of insurance | |
| school insurance plans . . . . | R |
| life . . . . . | Ap |
| homeowners (fire, liability, theft, etc...) . . . . . | K |
| medical. . . . . | K |
| automobile (motorcycle, etc...) | Ap |
| mortgage . . . . . | K |
| renters insurance. . . . . | K |
| unemployment . . . . . | K |
| disability . . . . . | Aw |
| income protection plans. . . . | K |
| travel . . . . . | K |
| health insurance | |
| **PERSONAL INCOME:** | |
| Calculates job income | |

| GRADE 12<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| PERSONAL INCOME (cont.): | |
| hourly. . . . . | R |
| piece-rate. . . . . | R |
| commission. . . . . | M |
| bonuses . . . . . | Ap |
| Calculates payroll deductions (social security, fed. inc. tax, state inc. tax, wage tax, retirement, medical plan, etc...) . . | M |
| Reads payroll stubs . . . . . | M |
| Writes a budget with | |
| long and short range planning | Ap |
| Demonstrates a knowledge of retirement income | |
| Social Security Benefits. . | Ap |
| Retirement plans. . . . . | Ap |
| Retirement income from annuities . . . . . | Ap |
| Demonstrates a knowledge of fringe benefits . . . . . | K |
| BANKING AND FINANCING: | |
| Banking Services | |
| Uses a checking account . . | R |
| Balances a checkbook<br>Writes checks<br>Completes deposit slips<br>Understands the regulations governing checking accounts | |
| Uses a savings account. . . | M |
| Calculates interest<br>Understands the regulations governing savings accounts | |
| Understands the rules governing safety deposit boxes. . . . | K |
| Demonstrates a knowledge of trust funds . . . . . | Aw |

| GRADE 12<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|
| BANKING AND FINANCING (cont.): | |
| Demonstrates a knowledge of the special accounts offered by banking institutions (Christmas clubs, vacation clubs, etc...). . . . . | Ap |
| Uses checks . . . . . | M |
| Demonstrates a knowledge of different kinds of checks | |
| certified<br>payroll<br>travelers<br>personal<br>money orders | |
| Understands the procedure for cashing different kinds of checks | |
| Financing Services | |
| Demonstrates a knowledge of bank loans . . . . . | M |
| Demonstrates a knowledge of other loan agencies . . . . . | M |
| Demonstrates a knowledge of credit unions. . . . . | M |
| HOUSING COSTS: | |
| Reads meters (electric, gas, etc.) | Ap |
| Calculates utility bills (electric, gas, telephone, etc...) . . . . . | Ap |
| Interprets rental agreements. . . | Ap |
| Interprets mortgage agreements. . | Ap |
| Calculates interest on mortgage . | Ap |

| GRADE 12<br>PRACTICAL APPLICATIONS | Level of Ach. | GRADE 12<br>PRACTICAL APPLICATIONS | Level of Ach. |
|---|---|---|---|
| INVESTMENTS: | | | |
| Demonstrates a knowledge of bonds. . . . . | Ap | | |
| Knows the different types of bonds | | | |
| Calculates interest | | | |
| Demonstrates a knowledge of stocks . . . . . | K | | |
| Knows the different types of stocks | | | |
| Reads stock market report | | | |
| Calculates dividends | | | |
| Demonstrates a knowledge of annuities. . . . . | K | | |
| Demonstrates a knowledge of mutual funds. . . . . | K | | |
| Demonstrates a knowledge of saving certificates. . . . . | Ap | | |
| MUNICIPAL FINANCING: | | | |
| Reads and interprets municipal* budgets. . . . . | Aw | | |
| Demonstrates a knowledge of the regulations governing municipal* financing. . . . . | Aw | | |
| Traces sources of municipal* income . . . . . | Aw | | |
| Interprets graphs and charts related to municipal* income. | Aw | | |

*and school district

## GLOSSARY

ACUTE - an angle whose measure is greater than 0 but less than 90 degrees.

ADDEND - one of a set of numbers to be added as 2 or 3 in the problem of 2 + 3.

ALGORITHM - a special process of solving a certain type of problem.

ASSOCIATIVE PROPERTY OF ADDITION - the manner of grouping three numbers under addition does not affect their sum. (a + b) + c = a + (b + c)

ASSOCIATIVE PROPERTY OF MULTIPLICATION - the manner of grouping three numbers under multiplication does not affect the product. (a x b) x c = a x (b x c)

BASE - 1. in geometry, a side or face of a geometric figure upon which an altitude is constructed; 2. the number of which a percent is taken; 3. the number upon which a numeration system is constructed.

CARDINALITY - the number of elements contained in a given set is the cardinality of the set.

COMMUTATIVE PROPERTY OF ADDITION - the order of which two numbers are added does not affect their sum. a + b = b + a

COMMUTATIVE PROPERTY OF MULTIPLICATION - the order in which two numbers are multiplied does not affect their product. a x b = b x a

COMPASS - an instrument used to draw circles and arcs and to measure and compare distances.

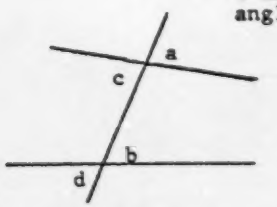
COMPLEMENTARY ANGLES - two angles whose sum is 90 degrees.

COMPOSITE NUMBER - a number greater than one that has more than two factors (e.g. 4, 6, 8, 9).

CONSTANT - a quantity whose value does not change.

COORDINATE PLANE - two perpendicular number lines in a plane.

CORRESPONDING ANGLES - a and b are a pair of corresponding angles
c and d are a pair of corresponding angles




a pair of angles in similar positions when formed when two lines are cut by a third line.

DENOMINATOR - the bottom numeral in a fraction. In 3/4, the 4 is the denominator.

## GLOSSARY

DISTRIBUTIVE PROPETY OF MULTIPLICATION OVER ADDITION - a x (b + c) = (a x b) + (a x c). The product of any number and the sum of two numbers may be computed by multiplying each addedn by the number and adding the product.

DIVIDEND - in a division problem, the number that is being divided. ex:

divisor------5 ⟌ 6 30----------dividend

DIVISOR - in a division problem, the number that is doing the dividing.

EQUILATERAL - equal sides.

EXPANDED NOTATION - any form that exhibits the meaning of each of the digits of a numeral.

EXPONENT - a number that tells how many times a number is to be used as a factor.

EXPONENTIAL NOTATION - Ex. $4^3$

GREATEST COMMON FACTOR - the largest number that is a factor of two or more numbers.

GROSS PROFIT - the difference between the selling price and the original cost.

IDENTITY PROPERTY OF 1 - 1. Multiplication-for any number (a) a x 1 = a & 1 x a = a 2. Division-for any number (a) a ÷ 1 = a

IDENTITY PROPERTY OF 0 - 1. Addition-for any number (a) a + 0 = a and 0 + a = a 2. Subtraction-for any number (a) a - 0 = a

IMPROPER FRACTIONS - a fraction in which the numerator is larger than the denominator. Ex. 9/4

INTEGERS - [...-3, -2, -1, 0, 1, 2, 3...]

LEAST COMMON DENOMINATOR - the least common multiple of the denominators of two or more fractions.

LEAST COMMON MULTIPLE - the "smallest" natural number which is a multiple of each of two or more given numbers.

LINEAR EQUATION - an equation which represents a straight line; in such an equation the exponents of the variables must be one.

LINEAR MEASUREMENT - a measure for straight line segments or distances.

MINUEND - in a subtraction problem it is that number from which another number is to be subtracted. Ex. in 8 - 5 = 3, the minuend is 8.

MIXED NUMBERS - a number form which is partially an integer and partially a fraction. Ex. 1 1/2

## GLOSSARY

MULTIPLES - a product obtained by the multiplication of a specified number and any positive whole number.

NATURAL NUMBERS - [1, 2, 3, 4, ...]

NEGATIVE NUMBERS - any number less than zero.

NET PROFIT - the difference between the price received for goods or services and the costs of these goods or services.

NON-NEGATIVE NUMBER - any number not less than zero.

NUMERATOR - the top numeral in a fraction. Ex. 3/4, 3 is the numerator.

OBTUSE - an angle whose measure is greater than a right angle (90°) but less than a straight angle (180°).

ORDINAL - a form or type of numeral which refers to the ordered place in a sequence or arrangement. Ex. first, second, third, etc.

PERCENT - (%) hundredths. A fractional number with denominator understood to be 100. Ex. 7% means 7/100 or .07.

PERCENTAGE - part of a whole. In the statement 20% of 80 is 16, the percentage is 16.

PI ($\pi$) - the ratio of the circumference of a circle to its diameter. The approximate value is 3.14 or 3 1/7. Pi ($\pi$) is the sixteenth Greek letter.

POLYGON - a plane closed broken-line figure.

PRIME FACTOR - a factor which is a prime number.

PRIME NUMBER - a natural number whose only factors are the number itself and 1. The number 1 is not prime.

PROBABILITY OF A RESULT - a number between 0 and 1 (inclusive) that tells about what part of the time a result will occur over a long run of trails. Ex. 1/10 or 10% of the time, 15/100 or 15% of the time.

PROPER FRACTION - a fraction in which the numerator is smaller than the denominator.

PROPORTION - a statement of the equality of two ratios.

PROTRACTOR - a mathematical instrument used to measure or draw angles.

QUADRILATERAL - a four-sided polygon.

QUOTIENT - the answer to a division problem.

RATE - the per cent of a number. In the statement 10% or 200 = 20, 10% is the rate.

## GLOSSARY

RATIO - a comparison of two numbers by division.

RATIONAL NUMBERS - a number which can be written in the form a/b where a and b are integers and be cannot be 0.

RECIPROCAL - two numbers are reciprocals if their product is 1.

REFLEX ANGLE - an angle whose measure is greater than 180° but less than 360°.

REGROUPING - renaming numbers in expanded form.

ROOTS OF NUMBERS - a number which when multipied by itself a specified number of times produces a given number. In the problem 2 x 2 x 2 = 8, the cube root of 8 is 2.

SETS - a collection of objects.

SIGNED NUMBERS - positive and negative numbers.

SUBSET - a set that is part of another set.

SUBTRAHEND - the top number in a subtraction problem.

Ex. 42----------subtrahend
- 16
26

SUPPLEMENTARY ANGLES - two angles whose sum is 180°.

VARIABLE EQUATION - an equation containing a letter which represents an unknown quantity.

VERTICAL ANGLES - opposite angles formed when two lines intersect.

WHOLE NUMBERS - [0, 1, 2, 3...].